

4.1 BIOLOGICAL RESOURCES

This section provides background information on biological resources including vegetation, wildlife habitats, wetlands, aquatic biology, wildlife species, and threatened and endangered species located in the proposed Project area. A discussion of Federal, State, and local laws, policies and regulations that influence biological resources is also presented. Impacts on biological resources that may result from Project-related activities are discussed in conjunction with mitigation measures. These mitigation measures have been developed through coordination with resources agencies and focus on avoiding, reducing, or compensating for potentially significant impacts on biological resources.

4.1.1 Environmental Setting

Information for this section was obtained from the *PG&E Line 108 Pipeline Project Biological Resources Technical Report* (PG&E 2006a), the *Draft Wetland Delineation Line 108 Project Site* (PG&E 2006b), the *Individual Permit Application to the Department of the Army Sacramento District Corps of Engineers for the PG&E Line 108 Replacement Project* (PG&E 2007), and the *Elk Grove Gas Line 108 Project Thornton to Elk Grove Plant Survey Report* (PG&E 2006c). Additional field surveys were conducted by EIP Associates biologists on November 9 and 23, 2005, January 16, 2006, and February 7, 2006. All information presented in this section has been independently reviewed and the information verified or deemed adequate by Environmental Science Associates (ESA). The additional field surveys included the entire Project study area. The “study area” is defined for the purpose of this evaluation as all areas within 500 feet of the proposed pipeline route as well as pullback areas, temporary use areas, and the construction yard. Additionally, queries of the California Department of Fish and Game (CDFG) Natural Diversity Database (CNDDDB) and the U.S. Fish and Wildlife Service’s (USFWS) Special-status Species database website were conducted in January 2006 by EIP Associates and April 2007 by ESA to identify any special-status plant or wildlife species that may occur in the region.

Regional Setting

The study area is located in the Great Valley of California ecological region, Hardpan Terraces subsection (Miles and Goudey 1997). The Great Valley of California is a vast, flat, low-lying plain almost entirely surrounded by mountains. The valley parallels the general north-south trend of the Sierra Nevada Mountains on the east and the California

Coast Ranges on the west. The northern half of the Central Valley is known as the Sacramento Valley, and the southern half is known as the San Joaquin Valley. The study area is located in the southern Sacramento Valley. The Sacramento Valley consists largely of floodplains, alluvial fans, and fan terraces, formed from alluvial material washed down from the Sierra Nevada Mountains. The Mediterranean climate is hot and dry during summers and cool and wet during winter. Average annual precipitation in the region is 17 inches. Mean maximum temperature is approximately 73 degrees Fahrenheit (°F) and mean minimum temperature is approximately 46 °F (WRCC 2007).

Within the study area, terrain is variable between level to gently sloping floodplains and alluvial fans. Elevations along the proposed pipeline route range from approximately 5 feet to 23 feet above mean sea level. Land uses along the proposed pipeline route include rural residential, agricultural, railroad, wildlife refuge/preserve, and open space. The proposed route would cross the Cosumnes and Mokelumne Rivers, along with two preserve areas: the Stone Lakes National Wildlife Refuge (managed by the USFWS) and the Cosumnes River Preserve (managed by the Bureau of Land Management). Staging area locations and pullback area locations are situated in various undeveloped areas.

Biological Communities

Biological communities generally correspond to vegetation or plant communities. Plant communities are assemblages of plant species that occur together in a given area and are defined by species composition and relative abundance. As illustrated in Figures 4.1-1a through 4.1-1h, the study area is dominated by agricultural, ruderal, and annual grassland habitats. Seasonal wetland, vernal pool, emergent wetland, and riparian woodland habitats are also found along the proposed pipeline route. Descriptions of the predominant existing vegetation community types found within the study area are provided below.

Agricultural Land

The majority of the study area is comprised of agricultural land. Agricultural land types include vineyards, alfalfa fields, silage corn, pasture/grazing land, and a dairy/stockyard. Due to the heavily disturbed nature of this habitat type, only those wildlife species that have adapted to intensive disturbance regimes associated with farming are likely to occur in agricultural land. Wildlife species observed during the November 2005, and January and February, 2006 field surveys conducted by EIP Associates included American crow

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(*Corvus brachyrhynchos*), European starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), western meadowlark (*Sturnella neglecta*), white-tailed kite (*Elanus leucurus*), American kestrel (*Falco sparverius*), and red-tailed hawk (*Buteo jamaicensis*). Other wildlife species expected to occur in the vicinity of the study area include tricolored blackbird (*Agelaius tricolor*), northern mockingbird (*Mimus polyglottos*), western scrub jay (*Aphelocoma coerulescens*), Brewer's blackbird (*Euphagus cyanocephalus*), Swainson's hawk (*Buteo swainsoni*), house mouse (*Mus musculus*), black rat (*Rattus rattus*), Norway rat (*Rattus norvegicus*), striped skunk (*Mephitis mephitis*), opossum (*Didelphis virginiana*), raccoon (*Procyon lotor*), and coyote (*Canis latrans*).

Annual Grassland

Another common vegetation community found along the study area is annual grasslands. This habitat occurs along the northern portion of the proposed pipeline route in the Stone Lakes National Wildlife Refuge, along the southern portion of the proposed route at the Cosumnes River Preserve, and sporadically throughout the remainder of the proposed route where intensive agriculture or urbanization has not occurred. These grasslands are dominated by non-native annual species, including ripgut (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), foxtail barley (*Hordeum murinum* ssp. *leporinum*), wild oat (*Avena fatua*), annual ryegrass (*Lolium multiflorum*), and rattail fescue (*Vulpia myuros*). In addition, a wide variety of non-native broad-leaved plants occur within the annual grassland community including rose clover (*Trifolium hirtum*), white-stemmed filaree (*Erodium botrys*), curly dock (*Rumex crispus*), rough cat's ear (*Hypochaeris radicata*), field bind weed (*Convolvulus arvensis*), yellow-star thistle (*Centaurea solstitialis*), and dove's foot geranium (*Geranium dissectum*). A small number of native species were also observed during the surveys, including fiddleneck (*Amsinckia menziesii* var. *intermedia*), dwarf lupine (*Lupinus bicolor*), narrow-leaf mule's ears (*Wyethia angustifolia*), and soap plant (*Chlorogalum pomeridianum*).

Wildlife species occurring in grasslands in the study area include small rodents, such as deer mice (*Peromyscus maniculatus*) and California vole (*Microtus californicus*), that feed on the abundance of grass seeds provided by this habitat, as well as cottontail (*Sylvilagus audubonii*), blacktail hare (*Lepus californicus*), and California ground squirrel (*Spermophilus beecheyi*). These small mammals provide food for a variety of predators common to the region, including mammals such as coyote (*Canis latrans*), gray fox (*Urocyon cinereoargenteus*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), and opossum (*Didelphis virginiana*), and birds such as red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), American kestrel (*Falco sparverius*),

1 and barn owl (*Tyto alba*). The abundant insects in these fields provide food for many
2 common birds in the region such as killdeer (*Charadrius vociferous*), American crow
3 (*Corvus brachyrhynchos*), European starling (*Sturnus vulgaris*), red-winged blackbird
4 (*Agelaius phoeniceus*), Brewer's black bird (*Euphagus cyanocephalus*), western
5 meadowlark (*Sturnella neglecta*), and barn swallow (*Hirundo rustica*). Other bird species
6 that are likely to occur in annual grasslands in the region include scrub jay (*Aphelocoma*
7 *coerulescens*) and western bluebird (*Sialia mexicana*). Reptile species frequently found in
8 annual grasslands include Pacific gopher snake (*Pituophis catenifer catenifer*), California
9 kingsnake (*Lampropeltis getula californiae*), valley garter snake (*Thamnophis sirtalis*
10 *fitchii*), western fence lizards (*Sceloporus occidentalis*), southern alligator lizards
11 (*Gerrhonotus multicarinatus*), and Gilbert's skink (*Eumeces gilberti*). Grasslands adjacent
12 to wetlands or other sources of moisture could also support Pacific tree frog (*Pseudacris*
13 *regilla*) and western toad (*Bufo boreas*).

14 *Ruderal Communities*

15 The predominant non-agricultural vegetation communities found in the study area consist
16 of ruderal communities of introduced annual and perennial grasses and forbs associated
17 with highly disturbed habitats. These communities can be found primarily along roadside
18 and railroad rights-of-way (ROW), including the proposed lay down area north of Elk
19 Grove Boulevard, and other disturbed areas such as at the edges of urbanized areas.
20 Many of these communities are patchy or linear in nature, especially along roads and rail
21 lines, depending on the degree of disturbance. Density and composition of these
22 community types vary with site factors such as topography, agricultural practices, and
23 degree of disturbance. The more commonly observed plant species in the study area
24 include Bermuda grass (*Cynodon dactylon*), Johnson grass (*Sorghum halapense*), wild
25 radish (*Raphanus sativus*), Italian thistle (*Carduus pycnocephalus*), yellow star-thistle
26 (*Centaurea solstitialis*), wild mustard (*Brassica* spp.), prickly lettuce (*Lactuca serriola*),
27 bitter lettuce (*Lactuca virosa*), milk thistle (*Silybum marianum*), common knotweed
28 (*Polygonum arenastrum*), cheeseweed (*Malva* spp.), field bindweed (*Convolvulus*
29 *arvensis*), goosefoot (*Chenopodium* spp.), pigweed (*Amaranthus* spp.), horseweed
30 (*Conyza canadensis*), and prickly sow-thistle (*Sonchus asper*). Wildlife species found in
31 this habitat type would be similar to those found within grassland and agricultural habitats.

32 *Vernal Pool*

33 Vernal pools occur throughout the Stone Lakes National Wildlife Refuge portion of the
34 proposed pipeline route and elsewhere in grasslands within the study area where no

intensive ground disturbance has occurred. Approximately 11.4 acres of vernal pools have been verified within the proposed Project corridor¹ (PG&E 2007). This community is dominated by native annual species occurring in shallow depressions in open grasslands where water collects and remains on the surface for extended periods during the rainy season. As these depressions dry in the spring, the plants grow and bloom often forming concentric rings of brightly colored flowers. Common species include coyote thistle (*Eryngium vaseyi*), Fremont's goldfields (*Lasthenia fremontii*), white-head pincushion (*Navarretia leucocephala*), Douglas mesamint (*Pogogyne douglasii*), doublehorn calicoflower (*Downingia bicornuta*), flowering quillwort (*Lilia scroidies*), cow's clover (*Trifolium depauperatum*), loosestrife hedge-hyssop (*Lythrum hyssopifolia*), toad rush (*Juncus bufonius*), chaffweed (*Centunuculus minima*), water star-wort (*Callitriche marginata*), ranunculus (*Ranunculus bonariensis*), and hedge hyssop (*Gratiola ebracteata*).

Wildlife species occurring in or near vernal pools include a wide variety of insects, particularly native solitary bees. Other species utilizing this habitat include vernal pool fairy shrimp (*Branchinecta lynchi*), vernal pool tadpole shrimp (*Lepidurus packardii*), Pacific tree frog (*Pseudacris regilla*), western toad (*Bufo boreas*), valley garter snake (*Thamnophis sirtalis fitchii*), and a wide variety of bird species that forage in and around vernal pools.

Seasonal Wetland

Seasonal wetlands within the study area retain soil moisture into late spring and are dominated by hydrophytic grasses and grass-like species, including Italian rye grass (*Lolium multiflorum*), foxtail barley (*Hordeum murinum* ssp. *leporinum*), Mediterranean barley (*Hordeum marinum* spp. *Gussoneanum*), annual hair grass (*Deschampsia danthonioides*), spike rush (*Eleocharis macrostachya*), Pacific foxtail (*Alopecurus saccatus*), dallisgrass (*Paspalum dilatatum*), and Mexican rush (*Juncus mexicanus*). Seasonal wetlands with shallow ponding dry sooner in spring and support scattered occurrences of vernal pool vegetation. Seasonal wetlands with deeper ponding also support occasional occurrences of species associated with emergent wetlands and irrigated wetlands as noted below.

Seasonal wetland habitat occurs in more disturbed portions of the study area along the Union Pacific Railroad (UPRR) ROW, roadsides, and pastures. Approximately 69.0 acres of seasonal wetlands have been verified within the proposed Project corridor (PG&E

¹ For purposes of the wetland delineation, the proposed Project corridor is defined as 350 to 400 feet in width for 12 miles centered on the proposed pipeline alignment.

2007). These seasonal wetlands occur in low depressional areas and support Bermuda grass (*Cynodon dactylon*), Italian ryegrass (*Lolium multiflorum*), spikerush (*Eleocharis macrostachya*), Baltic rush (*Juncus balticus*) iris-leaved rush (*Juncus xiphioides*), pale smartweed (*Polygonum lapathifolium*), lady's thumb (*Polygonum persicaria*), stinging nettle (*Urtica dioica* ssp. *Holosericea*), and Himalayan blackberry (*Rubus discolor*). Often these seasonal wetland features support common wildlife species such as house sparrow (*Passer domesticus*), red-winged blackbird (*Agelaius phoeniceus*), killdeer (*Charadrius vociferous*), northern mockingbird (*Mimus polyglottos*), house finch (*Carpodacus mexicanus*), and Pacific tree frog (*Pseudacris regilla*).

Emergent Wetland and Irrigated Wetland

Freshwater emergent wetlands occur at various locations in the study area where inundated or perennially saturated soils are present. The most extensive areas occur within the Cosumnes River Preserve, and in irrigation ditches and channelized creeks that either cross or parallel the alignment at various points between Elk Grove Boulevard and Twin Cities Road. Approximately 6.4 acres of emergent wetlands have been verified within the proposed Project corridor (PG&E 2007). This habitat supports a dense association of perennial hydrophytic species including cattail (*Typha latifolia*), tule (*Schoenoplectus acutus*), Mexican rush (*Juncus mexicanus*), iris leaved rush (*Juncus xiphioides*), tall vervain (*Verbena bonariensis*), willow dock (*Rumex salicifolia*), and American bugleweed (*Lycopus americana*). These wetlands also support occasional trees and shrubs, usually at the wetland boundary, including Himalayan blackberry (*Rubus discolor*), California rose (*Rosa californica*), white alder (*Alnus rhombifolia*), and sand bar willow (*Salix exigua*). Emergent wetlands occur in association with open water and riparian habitats. At the southern end of the study area, the Cosumnes River Preserve operates several seasonally flooded tracts of former cropland that are ponded for the benefit of waterfowl; these areas are emergent wetlands.

Wildlife species occurring within this habitat type includes freshwater clams (*Corbicula* sp.), Louisiana crayfish (*Procambarus clarkii*), red-winged blackbird (*Agelaius phoeniceus*), great blue heron (*Ardea herodias*), great egret (*Ardea alba*), American coot (*Fulica americana*), pied-billed grebe (*Podilymbus podiceps*), and green heron (*Butorides virescens*). This habitat would also support raccoon (*Procyon lotor*), and muskrat (*Ondatra zibethicus*).

Riparian Woodland

Riparian woodland is found primarily along the southern portion of the proposed pipeline route, south of Twin Cities Road, within the boundaries of the Consumes River Preserve. This community is most prevalent along the Mokelumne and Cosumnes River corridors, and along their tributaries. Approximately 29.9 acres of riparian woodland have been verified within the proposed Project corridor (PG&E 2007). Riparian habitats within the study area support a wide variety of species and broad array of community complexity and structure. Trees and shrubs tolerant of seasonal flooding and high groundwater conditions dominate these riparian communities. Dominant trees in this habitat include valley oak (*Quercus lobata*), Fremont's cottonwood (*Populus fremontii*), and Oregon ash (*Fraxinus latifolia*). Understory conditions are highly variable, but can include annual grasses or emergent wetland vegetation. Understory shrubs include sandbar willow (*Salix sessilifolia*), button willow (*Cephalanthus occidentalis*), poison oak (*Toxicodendron diversilobum*), box elder (*Acer negundo*), California blackberry (*Rubus ursinus*), and California rose (*Rosa californica*).

Riparian woodlands provide abundant food, cover, and breeding sites for wildlife in close proximity to water. These factors and the structural diversity of riparian woodland are largely responsible for the high productivity of this habitat. Characteristic bird species in this habitat include California quail (*Callipepla californica*), mourning dove (*Zenaida macroura*), Nuttall's woodpecker (*Picoides nuttallii*), black phoebe (*Sayornis nigricans*), western wood-pewee (*Contopus sordidulus*), California towhee (*Pipilo crissalis*), and song sparrow (*Melospiza melodia*). A number of these species feed in annual grasslands and agricultural fields and nest or roost in adjacent riparian woodland. Rookeries of great egrets (*Ardea alba*) and great blue herons (*Ardea herodias*) are often found in riparian woodland, which provides tall nesting trees near marshes, irrigation ditches and other foraging habitats. These areas also provide important feeding, resting, and nesting habitat for neotropical migrant songbirds such as warblers, vireos, grosbeaks, and flycatchers.

Mammals that are typically found within riparian woodland habitat may include opossum (*Didelphis virginiana*), raccoon (*Procyon lotor*), deer mouse, broad-footed mole (*Scapanus latimanus*), striped skunk (*Mephitis mephitis*), and gray fox (*Urocyon cinereoargenteus*). Amphibians and reptiles likely to occur in this community include western fence lizard (*Sceloporus occidentalis*), Pacific tree frog (*Pseudacris regilla*), California king snake (*Lampropeltis getulus californiae*), valley garter snake (*Thamnophis sirtalis fitchii*), and Gilbert's skink (*Eumeces gilberti*).

In addition to providing high value wildlife habitat, riparian corridors provide local movement corridors between fragmented habitat patches, and necessary habitat for migrant wildlife species such as neotropical migrant songbirds. Due to the value and scarcity of riparian woodlands, on both a State and region-wide scale, they are considered a sensitive habitat type and monitored closely by the CDFG.

Special Status Species and Sensitive Habitats

The potential occurrence of special-status plant and animal species within and in the vicinity of the proposed pipeline route has been determined through habitat information collected during field surveys of the proposed pipeline route and a review of the CNDDDB and USFWS online species list. CNDDDB occurrences are illustrated in Figure 4.1-2.

Reconnaissance-level biological surveys that were performed by EIP Associates on November 9, and 23, 2005, January 16, 2006, and February 7, 2006, determined habitat types present within and adjacent to the proposed pipeline route and assessed their suitability for native plant and animal species. Data gathered by the surveys have been independently reviewed and verified or deemed adequate by ESA. Reconnaissance surveys consisted of walking transects through representative habitats that occur along the proposed pipeline route and assessing the habitat for its suitability to support those species that were identified through earlier literature review. Particular attention was given to areas that appeared to provide the most suitable habitat for the special-status species that are expected to occur in the region, such as freshwater marsh, vernal pools, seasonal wetlands, and drainages. Using the information gathered during these site visits, the species list derived from the background research was refined to determine which species were likely to occur within and around the proposed pipeline route. Based upon this work, Table 4.1-1 (see below) lists the special-status species that are known to occur or have the potential to occur in the study area and indicates the species' current listing status and potential location.

Sensitive Habitats

Coastal and Valley Freshwater Marsh

Coastal and valley freshwater marsh is dominated by perennial emergent plants, primarily tule (*Schoenoplectus* spp.) and cattail (*Typha* spp.), from three to six feet tall that often form completely closed canopies. It occurs in permanently flooded freshwater that lacks significant current or tides and promotes the accumulation of deep, peaty soils. Characteristic species include sedges (*Carex lanuginosa* and *C. senta*), yellow nutgrass

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1 Table 4.1-1. Regionally-Occurring Special-Status Species

| Scientific Name Common Name | Listing Status USFWS/ CDFG/CNPS | General Habitat | Potential for Occurrence |
|--|---------------------------------------|--|---|
| Invertebrates | | | |
| <i>Branchinecta lynchi</i> vernal pool fairy shrimp | FT/--/-- | Lifecycle restricted to vernal pools. | High. Suitable habitat is present in the study area. Known occurrences are located in the Stone Lakes Preserve at the north end of the proposed pipeline route. |
| <i>Desmocerus californicus dimorphus</i> valley elderberry longhorn beetle | FT/--/-- | Breeds and forages exclusively on elderberry shrubs (<i>Sambucus mexicana</i>) typically associated with riparian forests, riparian woodlands, elderberry savannas, and other Central Valley habitats. Occurs only in the Central Valley of California. | High. Suitable habitat is present in the study area, and several elderberry shrubs were recorded within the study area during site plant surveys. |
| <i>Lepidurus packardii</i> vernal pool tadpole shrimp | FE/--/-- | Lifecycle restricted to vernal pools. | High. Suitable habitat is present in the study area. Known occurrences are located in the Stone Lakes Preserve at the north end of the proposed pipeline route. |
| Fish | | | |
| <i>Hypomesus transpacificus</i> Delta smelt | FT/ST/-- | Open surface waters in the Sacramento/San Joaquin Delta. Seasonally in Suisun Bay, Carquinez Strait, and San Pablo Bay. Found in Delta estuaries with dense aquatic vegetation and low occurrence of predators. May be affected by downstream sedimentation. | Medium. Suitable habitat is present within the study area in the Cosumnes and Mokelumne Rivers. |

4.1 Biological Resources

| Scientific Name Common Name | Listing Status USFWS/ CDFG/CNPS | General Habitat | Potential for Occurrence |
|---|---------------------------------------|---|--|
| <i>Oncorhynchus mykiss</i> Steelhead - Central Valley Evolutionary Significant Unit (ESU) | FT/--/-- | This ESU enters the Sacramento and San Joaquin Rivers and their tributaries from July to May, spawning from December to April. Young move to rearing areas in and through the Sacramento and San Joaquin Rivers, Delta, and San Pablo and San Francisco Bays. | Low. Project area does not support spawning habitat for adult fish or rearing habitat for juvenile steelhead. Additionally, historic populations in the San Joaquin basin (except in the lower Stanislaus River) are now believed extirpated (Moyle 2002). |
| <i>Oncorhynchus tshawytscha</i> Chinook Salmon - Central Valley Fall / Late Fall-Run ESU | --/CSC/-- | This ESU enters the Sacramento and San Joaquin Rivers and their tributaries from July to April, spawning October to February. Young move to rearing areas in and through the Sacramento and San Joaquin Rivers, Delta, and San Pablo and San Francisco Bays. | Medium. Suitable habitat is present within the study area in the Cosumnes and Mokelumne Rivers. |
| <i>Oncorhynchus tshawytscha</i> Chinook Salmon Winter Run | FE/SE/-- | This ESU enters the Sacramento River from December to May; spawning peaks May and June. Upstream movement occurs more quickly than in spring run population. Young move to rearing areas in and through the Sacramento River, Delta, and San Pablo and San Francisco. | Unlikely. Habitat for this ESU is limited to the Sacramento River Drainage (Moyle 2002). |
| <i>Oncorhynchus tshawytscha</i> Spring-Run Chinook Salmon | FT/ST/-- | This ESU enters the Sacramento and San Joaquin Rivers and tributaries March to July, spawning from late August to early October. Young move to rearing areas in and through the Sacramento and San Joaquin Rivers, Delta, and San Pablo and San Francisco Bays. | Unlikely. The habitat for this ESU is limited to the Sacramento River Drainage (Moyle 2002). |

| Scientific Name Common Name | Listing Status USFWS/ CDFG/CNPS | General Habitat | Potential for Occurrence |
|---|---------------------------------------|---|---|
| <i>Pogonichthys macrolepidotus</i> Sacramento splittail | --/CSC/-- | Currently known only from the Delta, Suisun Bay, and associated marshes. Prefers slow-moving river sections and dead-end sloughs. Requires flooded vegetation for spawning and juvenile foraging habitat. Spawning occurs over flooded vegetation. | Medium. Suitable habitat is present within the study area in the Cosumnes and Mokelumne Rivers. |
| Amphibians | | | |
| <i>Ambystoma californiense</i> California tiger salamander | FT/CSC/-- | Annual grassland and grassy understory of valley-foothill hardwood habitats in central and northern California. Needs underground refuges and vernal pools or other seasonal water sources. | Medium. Suitable habitat is present in the study area, although there are no known occurrences in the study area vicinity. |
| <i>Rana aurora draytonii</i> California red-legged frog | FT/CSC/-- | Breeds in slow-moving streams, ponds, and marshes with emergent vegetation; forages in nearby uplands within approximately 200 feet. | Low. Limited suitable habitat is present in the study area, and this species may be extirpated from the Central Valley floor. There are no known occurrences in the study area vicinity. |
| <i>Rana boylei</i> Foothill yellow-legged frog | --/CSC/-- | Frequents shallow, slow, gravelly streams and rivers with sunny banks, in forests, chaparral, and woodlands. | Low. Limited suitable habitat is present in the study area. There is one CNDDDB occurrence located 5 miles north of Lodi; however this is thought to be a stray individual from the Sierra foothills (Stebbins 2003). |
| Reptiles | | | |
| <i>Clemmys marmorata</i> western pond turtle | --/CSC/-- | Ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation. Requires basking sites and suitable upland habitat for egg-laying. Nest sites most often characterized as having gentle slopes (less than 15 percent) with little vegetation or sandy banks. | High. Suitable habitat is present in the study area, and known CNDDDB occurrences are present at the southern end of the proposed pipeline route. |

4.1 Biological Resources

| Scientific Name Common Name | Listing Status USFWS/ CDFG/CNPS | General Habitat | Potential for Occurrence |
|--|---------------------------------------|---|--|
| <i>Thamnophis gigas</i> giant garter snake | FT/ST/-- | Generally inhabits marshes, sloughs, ponds, slow-moving streams, ditches, and rice fields that have water from early spring till mid-fall. Emergent vegetation (cattails and bulrushes), open areas for sunning, and high ground for hibernation and cover. | High. Suitable habitat is present in the study area. One CNDDDB occurrence is located along the northern portion of the proposed pipeline route. |
| Birds | | | |
| <i>Accipiter cooperii</i> Cooper's hawk | --/CSC/-- | Nests in riparian areas and oak woodlands, forages at woodland edges. | Medium. Suitable habitat is present within the study area. |
| <i>Agelaius tricolor</i> tricolored blackbird | --/CSC/-- | Largely endemic to California, most numerous in the Central Valley and nearby vicinity. Typically requires open water, protected nesting substrate, and foraging grounds within vicinity of the nesting colony. Nests in dense thickets of cattails, tules, and willow. | Medium. Suitable habitat is present within the study area. |
| <i>Ardea alba</i> great egret (rookery) | --/--/-- | Fresh and saltwater marshes, marshy ponds and tidal flats, nests in trees or shrubs. | Medium. Suitable habitat is present within the study area. |
| <i>Ardea herodias</i> great blue heron (rookery) | --/--/-- | Groves of tall trees, especially near shallow water foraging areas such as marshes, tide-flats, lakes, rivers/streams and wet meadows. | Medium. Suitable habitat is present within the study area. |
| <i>Athene cunicularia</i> burrowing owl | --/CSC/-- | Forages in open plains, grasslands, and prairies; typically nests in abandoned small mammal burrows. | Medium. Suitable habitat is present within the study area. |
| <i>Buteo swainsoni</i> Swainson's hawk | --/ST/-- | Forages in open plains, grasslands, and prairies; typically nests in trees or large shrubs. | High. Suitable habitat is present in the study area, and known occurrences are present in the immediate vicinity. |

| Scientific Name Common Name | Listing Status USFWS/ CDFG/CNPS | General Habitat | Potential for Occurrence |
|---|---------------------------------------|---|---|
| <i>Coccyzus americanus occidentalis</i> western yellow-billed cuckoo | FC/SE/-- | Nests in densely foliated deciduous trees and shrubs especially willow, in broad riparian forest. | Low. Study area is outside the known breeding range for this species. Occurrence within the vicinity of the study area has been extirpated. |
| <i>Elanus leucurus</i> white-tailed kite | --/CFP/-- | Forages in open plains, grasslands, and prairies; typically nests in trees. | Medium. Suitable habitat is present within the study area. |
| <i>Haliaeetus leucocephalus</i> bald eagle | FT, BEPA/SE/-- | Nests in large trees with open branches along lake and river margins, usually within one mile of water. | Low. There are no known occurrences in the vicinity of the proposed pipeline route. |
| <i>Phalacrocorax auritus</i> double-crested cormorant (rookery) | --/CSC/-- | Colonial nester on coastal cliffs, offshore islands, and along lake margins in the interior of the state. | Medium. Suitable habitat is present within the study area. |
| Mammals | | | |
| <i>Taxidea taxus</i> American badger | --/CSC/-- | Occurs in a wide variety of open forest, shrub, and grassland habitats that have friable soils for digging. | Low. There are no known current occurrences in the study area vicinity. |
| Plants | | | |
| <i>Aster lentus</i> Suisun marsh aster | --/--/1B.2 | Found in brackish or freshwater marshes and along the banks of sloughs and watercourses within the Sacramento-San Joaquin River Delta. Occurs below 492 feet elevation. Blooms August through November. | Medium. Suitable habitat is present within the study area. |
| <i>Carex comosa</i> bristly sedge | --/--/2.1 | Generally found in lake-margin and edge habitats, also occurs in wet places within valley and foothill grassland, below 1,312 feet in elevation. | Medium. Suitable habitat is present within the study area. |

4.1 Biological Resources

| Scientific Name Common Name | Listing Status USFWS/ CDFG/CNPS | General Habitat | Potential for Occurrence |
|--|---------------------------------------|---|---|
| <i>Downingia pusilla</i> dwarf downingia | --/--/2.2 | Prefers lake margins, vernal pools and wet places sometimes playas and grasslands, below 492 feet elevation. Blooms March through May. | High. Suitable habitat is present in the study area. Known occurrences are present at the north end of the alignment within the vernal pools of the Stone Lakes National Wildlife Refuge. |
| <i>Gratiola heterosepala</i> Boggs Lake hedge-hyssop | --/SE/1B.2 | Marshes and swamps, lake margins, and in clay substrate in vernal pools. Blooms April through August below 4,000 feet in elevation. | Medium. Suitable habitat is present within the study area. |
| <i>Hibiscus lasiocarpus</i> rose-mallow | --/--/2.2 | Prefers freshwater marshes and swamps. Blooms June through September below 130 feet in elevation. | High. Suitable habitat is present in the study area. Known occurrences are present at the south end of the alignment in the Cosumnes River Preserve. |
| <i>Juglans californica</i> var. <i>hindsii</i> Northern California black walnut | --/--/1B.1 | Occurs in riparian forest and woodland, 164 to 656 feet in elevation. Blooms April through May. | Unlikely. Species known from only four historic locations; occurrence within the vicinity of the study area has been extirpated (CDFG 2007). Walnut trees within the study area are likely common hybrids of <i>Juglans hindsii</i> and English walnut (<i>J. regia</i>). |
| <i>Lathyrus jepsonii</i> var. <i>jepsonii</i> Delta tule pea | --/--/1B.2 | Occurs in both tidal freshwater and brackish marshes in the Central and San Joaquin Valleys and in the Bay Area, below 98 feet elevation. Blooms May through September. | Medium. Suitable habitat is present in the study area. |
| <i>Legenere limosa</i> legenere | --/--/1B.1 | Occurs in vernal pool beds, below 2001 feet elevation. Blooms April through June. | High. Suitable habitat is present in the study area, and this species was observed during field investigations at the north end of the study area. |

| Scientific Name Common Name | Listing Status USFWS/ CDFG/CNPS | General Habitat | Potential for Occurrence |
|--|---------------------------------------|---|---|
| <i>Lilaeopsis masonii</i> Mason's lilaeopsis | --/SR/1B.1 | Generally occurs in riparian scrub, freshwater-marsh and brackish-marsh habitats, at approximately sea level. Blooms April through November. | Medium. Suitable habitat is present in the study area. |
| <i>Limosella subulata</i> Delta mudwort | --/--/2.1 | Generally occurs under wet conditions in tidal freshwater-marsh habitats, below 32 feet elevation. | Medium. Suitable habitat is present in the study area. |
| <i>Orcuttia tenuis</i> slender orcutt grass | FT/SE/1B.1 | Annual herb occurring in vernal pools, at 656 to 3,609 feet in elevation. Blooms May through October. | Medium. Suitable habitat is present in the study area. |
| <i>Orcuttia viscida</i> Sacramento orcutt grass | FE/SE/1B.1 | Occurs in vernal pools, below 328 feet elevation. Blooms April through July. | Medium. Suitable habitat is present in the study area. |
| <i>Sagittaria sanfordii</i> Sanford's arrowhead | --/--/1B.2 | Found below 984 feet elevation in assorted freshwater habitats including marshes, swamps and seasonal drainages. Blooms May through October. | Medium. Suitable habitat is present in the study area. |
| <i>Scutellaria lateriflora</i> Blue skullcap | --/--/2.2 | Found below 1,640 feet elevation in wet habitats including marshes, seeps, and swamps. Blooms July through September. | Medium. Suitable habitat is present in the study area. |

Status Code definitions:

Federal (U.S. Fish and Wildlife Service):

BEPA = Bald Eagle Protection Act

FE = Listed as Endangered by the Federal Government

FT = Listed as Threatened by the Federal Government

FC = Candidate for Federal listing

State (California Department of Fish and Game):

SE = Listed as Endangered by the State of California

ST = Listed as Threatened by the State of California

SR = Listed as Rare by the State of California (plants only)

CSC = California species of special concern

4.1 Biological Resources

1 CFP = California fully protected species

2 California Native Plant Society:

3 List 1B = Plants rare, threatened, or endangered in California and elsewhere

4 List 2 = Plants rare, threatened, or endangered in California but more common elsewhere

5

6 CNPS Code Extensions:

7 .1 = Seriously endangered in California (over 80 percent of occurrences threatened/high degree and immediacy of threat) and

8 .2 = Fairly endangered in California (20 to 80 percent occurrences threatened).

9

10 Sources: CNPS 2007; CDFG 2007; and USFWS 2007

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(*Cyperus esculentus*), tall flatsedge (*Cyperus eragrostis*), spikerush (*Eleocharis* spp.), marsh pennywort (*Hydrocotyle verticillata* var. *triradiata*), water mudwort (*Limosella aquatica*), common reed (*Phragmites australis*), and bur-reed (*Sparganium eurycarpum* var. *eurycarpum*). This habitat is located occasionally along the coast and in coastal valleys near river mouths and around the margins of lakes and streams. Historically, this habitat type also occurred in the Sacramento-San Joaquin Delta. Historical marshes have been significantly degraded by agricultural development, which included draining and filling former wetlands, and levee bank stabilization practices, including riprap, chemical and mechanical vegetation control, and the introduction of non-native species. Valley freshwater marsh habitat occurs within the Cosumnes River Preserve, but could also occur along any of the more naturalized drainages that cross the proposed pipeline route north of the Preserve.

Great Valley Oak Riparian Forest

The Great Valley Oak Riparian Forest community is a closed canopy riparian forest dominated by valley oaks (*Quercus lobata*). Other common canopy species include black walnut (*Juglans hindsii*), California sycamore (*Platanus racemosa*), and Oregon ash (*Fraxinus latifolia*). The Great Valley Riparian Forest was once extensive along the Sacramento River. Its understory is typically dense with a variety of vine and shrub species including box elder (*Acer negundo*), elderberry (*Sambucus mexicana*), button brush (*Cephalanthus occidentalis*), California Dutchman's pipe (*Aristolochia californica*), California grape (*Vitis californica*), Himalayan blackberry (*Rubus discolor*), and California rose (*Rosa californica*), and frequently includes an herbaceous layer of perennial grasses and sedges (*Carex* spp.). This vegetation community is subject to flooding where the hydrologic regime is intact. Regeneration of valley oak seedlings is best at sites where livestock grazing or active agriculture are restricted or absent. In areas where a site is less subject to flooding, or rises further above the water table, this habitat may transition into valley oak woodland or annual grassland.

Great Valley Mixed Riparian Forest

The Great Valley Mixed Riparian Forest has a diverse and typically dense mixture of tall mature cottonwood (*Populus fremontii*), willows (*Salix* spp.), California sycamore (*Platanus racemosa*), box elder (*Acer negundo*), black walnut (*Juglans hindsii*), and white alder (*Alnus rhombifolia*). The understory includes shrub species such as button brush (*Cephalanthus occidentalis*), Himalayan blackberry (*Rubus discolor*), poison oak (*Toxicodendron diversilobum*), California grape (*Vitis californica*), and California

Dutchman's pipe (*Aristolochia californica*). Perennial grasses such as creeping wild rye (*Leymus triticoides*), and sedges (*Carex* spp.) may form dense pockets in the understory. Openings within this community may also support elderberry savanna. The Great Valley Mixed Riparian Forest may occur some distance from the active channel but still be subject to over-bank flooding.

Northern Hardpan Vernal Pool

This habitat consists of shallow ephemeral waterbodies found in depressions up to several hectares in size, occurring in grasslands and open woodlands throughout intermountain valleys of California and Oregon. Northern hardpan vernal pools are formed by an indurated clay or cemented hardpan that retains water from surface runoff through winter and some portion of the spring, but typically dry down entirely by the early summer months. This habitat typically occurs in areas with a hummocky micro-relief. Characteristic plant species include downingia (*Downingia* spp.), quillwort (*Isoetes orcuttii*), America pillwort (*Pilularia americana*), white brodiaea (*Triteleia hyacinthina*), spikerush (*Eleocharis* spp.), coyote thistle (*Eryngium vaseyi*), popcornflower (*Plagiobothrys* spp.), speedwell (*Veronica peregrina*), annual hairgrass, and water starwort (*Callitriche* spp.). As these pools dry in the spring and early summer, the plants grow and bloom often forming concentric rings of similar vegetation. Due to their isolation in upland-dominated landscapes, many endemic plant species are common in vernal pools.

Definitions of Special-Status Species

Special-status species are plants and animals that are legally protected under the State and/or Federal Endangered Species Acts or other regulations and are species that are considered rare by the scientific community to qualify for such listing. These species are in the following categories:

- Plants or animals listed or proposed for listing as threatened or endangered under the Federal Endangered Species Act (ESA) (50 Code of Federal regulations [CFR] 17.12 [listed plants], 17.11 [listed animals] and various notices in the Federal Register [FR] [proposed species]);
- Plants or animals that are candidates for possible future listing as threatened or endangered under the Federal ESA (61 FR 40, February 28, 1996);
- Plants or animals listed or proposed for listing by the State of California as threatened or endangered under the California ESA (14 California Code of Regulations [CCR] 670.5);

- Plants listed as rare or endangered under the California Native Plant Protection Act (CDFG, Section 1900 et seq.);
- Plants that meet the definitions of rare and endangered under the California Environmental Quality Act (CEQA) (State CEQA Guidelines, Section 15380);
- Plants considered under the California Native Plant Society (CNPS) to be “rare, threatened or endangered in California” (Lists 1A, 1B, and 2 in CNPS 2001);
- Plants listed by CNPS as plants about which more information is needed to determine their status and plants of limited distribution (Lists 3 and 4 in CNPS 2001), which may be included as special-status species on the basis of local significance or recent biological information;
- Animals fully protected in California (CDFG Code, Sections 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]); and
- CDFG list of Species of Special Concern.

Potentially Affected Listed and Proposed Species

A list of special-status plant and animal species that have the potential to occur within the vicinity of the study area was compiled based on data in the CNDDDB (CDFG 2007), CNPS literature (CNPS 2007), and the USFWS List of Federal Endangered and Threatened Species that may be Affected by Projects in the Florin, Bruceville, and Thornton 7½ Minute Quads (USFWS 2007).

Table 4.1-1 lists special-status plants and animals with the potential to occur within the Project study area. Additionally, this table indicates the proposed Project’s “Potential for Occurrence” of each species listed. Conclusions follow the table regarding habitat suitability and species occurrence for the medium and high potential species (see below) based on reconnaissance-level area assessments conducted during the biological surveys, as well as from existing literature and databases described previously. Of the total 37 species listed in Table 4.1-1, there are three species with an unlikely potential, six species with a low potential, 19 species with a medium potential, and nine species with a high potential to occur in the vicinity of the study area. The “Potential for Occurrence” category is defined as follows:

- Unlikely: The study area and/or immediate area do not support suitable habitat for a particular species. The study area is outside of the species known range.

- Low Potential: The study area and/or immediate area only provide limited habitat for a particular species. In addition, the known range for a particular species may be outside of the immediate study area.
- Medium Potential: The study area and/or immediate area provide suitable habitat for a particular species, and habitat for the species may be impacted.
- High Potential: The study area and/or immediate area provide ideal habitat conditions for a particular species and/or known populations occur in the immediate area or within the potential area of impact.

Invertebrates

Vernal pool fairy shrimp (*Branchinecta lynchi*)

Vernal pool fairy shrimp are small, aquatic crustaceans. They feed on algae, bacteria, protozoa, rotifers, and bits of detritus (USFWS 2007). Vernal pool fairy shrimp are found in a variety of vernal pool habitats, ranging from small, clear, sandstone rock pools to large, turbid, alkaline, grassland valley floor pools. Most commonly they occur in pools in grass or mud bottomed swales, or basalt flow depression pools in unplowed grasslands (USFWS 2007).

This species is known to occupy a wide range of vernal pool types, thus its historic distribution likely coincided with the historic distribution of Central Valley, southern California, and Southern Oregon vernal pools. Currently, California populations are known to extend from Shasta County through most of the Central Valley to Tulare County. They range in coastal valleys from northern Solano County to the Carrizo Plain in San Luis Obispo County. A few additional isolated populations exist in southern California, including locations in Los Angeles, Santa Barbara, and Ventura Counties. Although vernal pool fairy shrimp are distributed more widely than other listed vernal pool species, they are generally uncommon throughout their range and are rarely abundant where they are found (USFWS 2005).

Vernal pool fairy shrimp are known to occur in the vernal pools within the Stone Lakes National Wildlife Refuge, and are likely to occur in the lay down area north of Elk Grove Boulevard, and in other vernal pools and seasonal wetlands within the study area.

Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*)

Valley elderberry longhorn beetles are unique insects that spend most of their lives within the stems of an elderberry (*Sambucus* spp.) shrub. Females lay their eggs within the bark, where larvae hatch and bore into the stems. Larvae remain within the stems

for one to two years. In March, when the elderberries begin to flower, the larvae pupate and emerge as adults. Mating usually occurs in June. Often, the only indicators of their presence are the distinctive small oval openings that are left after larvae pupate and emerge (UC Berkeley 2005; USFWS 2007).

Valley elderberry longhorn beetles utilize elderberry shrubs with a stem diameter of at least one inch (at ground level) as a host plant (USFWS 2007). In the Central Valley, elderberry shrubs are fairly common in remaining riparian forests and adjacent uplands (UC Berkeley 2005). Elderberry shrubs are typically found growing in association with other riparian species, but they can also occur as isolated shrubs in upland areas.

Historically, valley elderberry longhorn beetles ranged throughout the Central Valley. Currently, they are common in scattered populations from Redding to Bakersfield where historical riparian forests still exist (USFWS 2007).

As illustrated in Figure 4.1-3, a total of 40 elderberry shrubs have been observed near the northern and southern ends of the study area, and valley elderberry longhorn beetles could be expected to occur in or adjacent to the riparian areas in the Cosumnes River Preserve.

Vernal pool tadpole shrimp (*Lepidurus packardii*)

Vernal pool tadpole shrimp are small, aquatic crustaceans. They feed on living organisms such as fairy shrimp (*Branchinecta lynchi*) and organic detritus (USFWS 2007), and can be identified by the large, shield-like carapace that covers the anterior half of their bodies. Compared to other vernal pool crustaceans, the vernal pool tadpole shrimp has a long life span, maturing at a minimum of 25 days and taking an average of 54 days to reproduce. Vernal pool tadpole shrimp are found in a variety of vernal pool types, ranging from clear to highly turbid water, with temperatures from 50 to 84 degrees Fahrenheit, and sizes from small to very large (USFWS 2007). They have been found in a variety of geologic formations and soil types; however, the majority has been found on High Terrace landforms and in Redding and Corning soils (USFWS 2005).

This species probably occurred historically wherever appropriate vernal pool habitat existed throughout the Central Valley and Central Coast regions (USFWS 2005). Currently, this species is known to occur within the Central Valley from east of Redding in Shasta County to Merced County, with isolated occurrences in Fresno, Kings, and Tulare Counties. In the Central Coast Region they are known from private land in

Alameda County and San Francisco National Wildlife Refuge (USFWS 2005). There are several occurrences recorded in the CNDDDB scattered through the Central Valley from Shasta to northwestern Tulare County (CDFG 2007).

Vernal pool tadpole shrimp are known to occur in the vernal pools within the Stone Lakes National Wildlife Refuge, and were observed in wetlands in the proposed lay down area north of Elk Grove Boulevard. They are also likely to occur in other vernal pools and seasonal wetlands within the study area.

Fish

Delta smelt (*Hypomesus transpacificus*)

Delta smelt is a short-lived estuarine species endemic to the Sacramento-San Joaquin estuary. Adult delta smelt typically range in length from approximately 60 to 70 millimeters (mm), although some individuals within the population have been reported to be as large as 100 to 120 mm (Moyle 2002). Juvenile and adult delta smelt typically inhabit open waters of the lower Delta and Suisun Bay including Suisun Marsh. Juvenile and adult delta smelt are generally found in the lower reaches of the Sacramento River downstream of Rio Vista, the San Joaquin River downstream of Mossdale, and within Suisun Bay where salinity typically ranges from approximately 2 to 7 parts per thousand (Moyle 2002).

Delta smelt typically have a one-year lifecycle, although a small percentage of the adults may live to two years. Adult delta smelt migrate upstream into channels and sloughs of the eastern delta during the fall and winter in preparation for spawning, and live their entire lifecycle within the Sacramento-San Joaquin Delta. Peak spawning occurs during April through mid-May, but can range between January and July (Moyle 2002).

In the study area, suitable habitat for the Delta smelt, a State and federally threatened species, is present in the Cosumnes and Mokelumne Rivers.

Fall/Late-fall Run Chinook Salmon (*Oncorhynchus tshawytscha*)

Fall run and late-fall run Chinook salmon are an anadromous species, spawning in freshwater and spending a portion of their life cycle within the Pacific Ocean. Migration of adult fall-run Chinook salmon occurs from June through December, peaking in September and October. Adult fish migrate from October through April, with peak migration occurring in December into spawning habitats of the Sacramento and San Joaquin Rivers (CDFG 1998). Salmon fry (juveniles) move downstream, and smolts migrate to the ocean when

1

Insert Figure 4.1-3 (11x17 color)

1

back of Figure 4.1-3 (11x17 color)

spring rains increase river flow and turbidity, and decrease temperatures (Moyle 2002). This Evolutionary Significant Unit (ESU) is known to the Sacramento and San Joaquin Rivers and tributaries, and could be present within the study area in the Cosumnes and Mokelumne Rivers. Fall-run and late fall-run Chinook are designated as candidates for listing under the Federal ESA and are listed by CDFG as a species of special concern (CDFG 2007).

Sacramento Splittail (*Pogonichthys macrolepidotus*)

Sacramento splittail are endemic to Central Valley lakes, sloughs, and estuary environments (Moyle 2002). Within the San Joaquin River system they have been reported as far upstream as the confluence with the Merced River (USFWS 1995). More typically they are restricted to the north and western portions of the Delta, although their distribution can change depending on streamflows (Moyle 2002). They are very tolerant of low levels of dissolved oxygen, relatively high water temperatures, and changing salinities (Moyle 2002). Adults spawn over flooded vegetation between February and June, and embryos hatch in three to seven days (Moyle 2002).

In the study area, suitable habitat for the Sacramento splittail, which is a State species of special concern, is present in the Cosumnes and Mokelumne Rivers.

Amphibians

California tiger salamander (*Ambystoma californiense*)

California tiger salamanders are amphibians which spend much of their life cycle in underground refuges. Eggs and larvae require aquatic habitats that persist for at least ten weeks. During their larval stage, they feed on algae and small invertebrates, incorporating larger items, including tadpoles of other amphibians, as they grow. Adults consume earthworms, snails, insects, fish, and small mammals, but rarely feed during the non-breeding season (Zeiner et al. 1988-1990; USFWS 2007).

California tiger salamanders occur in annual grasslands and the grassy understory of valley-foothill hardwood habitats in central and northern California. They require underground refuges (usually ground squirrel or other small mammal burrows and occasionally human-made burrows), where they spend the majority of their annual cycle. During the fall and winter, California tiger salamanders migrate up to one mile from their refugia to breeding sites. After breeding, eggs are laid in seasonal and perennial water sources such as vernal pools, streams, and stockponds. Breeding is

1 most common and effective in vernal pools, while streams are rarely used (Stebbins
2 2003; Zeiner et al. 1998-1990).

3 California tiger salamanders occur in suitable habitat across central and northern
4 California. In the study area, vernal pool habitat may provide suitable breeding habitat
5 for tiger salamander; however, there are no known populations of California tiger
6 salamanders in the immediate vicinity of the study area (CDFG 2007).

7 *Reptiles*

8 Western Pond Turtle (*Clemmys marmorata*)

9 The western pond turtle is a relatively large, mostly aquatic turtle that inhabits fresh to
10 brackish, quiet water. Its carapace is broad and low and brown to olive in color. Pond
11 turtles can be found in a variety of aquatic habitats including ponds, lakes, marshes,
12 rivers, streams, and irrigation ditches that have a rocky or muddy substrate with aquatic
13 vegetation (Stebbins 2003). Despite its name the pond turtle regularly inhabits
14 terrestrial habitats usually during summer and winter months during overland dispersal,
15 oviposition (females), and mate-seeking (males). Habitats that contain adequate
16 refugia such as undercut banks, logs, submerged vegetation, and mud banks are
17 preferred. They are omnivorous generalists and opportunistic predators eating insects,
18 snakes, small mammals, birds, frogs, fish, and aquatic invertebrates.

19 The western pond turtle includes two subspecies, the northwestern pond turtle
20 (*Clemmys marmorata marmorata*) and the southwestern pond turtle (*Clemmys*
21 *marmorata pallida*). The northwestern pond turtle exists in California north of the
22 American River and overlaps the range of the southwestern pond turtle from the San
23 Joaquin Valley to the south and east of San Francisco Bay. Throughout their range,
24 adult pond turtles are active year-round, although farther north their activity can be
25 limited. At aquatic sites turtles hibernate in muddy stream bottoms. On land, they move
26 upland in search of hibernation spots. Mating occurs in April and May and oviposition
27 occurs in July and August in adjacent wetland margins or uplands that will not flood.

28 In the study area, suitable habitat for the western pond turtle, a State-listed species of
29 concern, is present in the freshwater marsh, riparian, and open water habitats in the
30 Cosumnes River Preserve along with the more naturalized drainages crossing the
31 proposed project route.

Giant Garter Snake (*Thamnophis gigas*)

The giant garter snake is a large, mostly aquatic snake that inhabits agricultural wetlands and other waterways such as irrigation and drainage canals, rice fields, managed marsh areas, sloughs, ponds, small lakes, low gradient streams, and adjacent uplands in the Central Valley. During the active season, giant garter snakes require adequate water in order to provide food and cover, and emergent, herbaceous wetland vegetation such as cattails and bulrushes for escape cover and foraging habitat. The giant garter snake needs grassy banks and openings in waterside vegetation for basking, and higher elevation uplands for cover and refuge from floodwaters during the snake's dormant season. This species is typically absent from larger rivers because of a lack of suitable habitat and emergent vegetative cover, and from wetlands with sand, gravel, rock substrates, and from riparian woodlands (USFWS 2007).

The giant garter snake is active in the early spring through mid-fall (mid-March through October), breeds from March through April, bears live young from July to September, and is dormant in the winter (Zeiner et al. 1988–1990). The giant garter snake feeds primarily on small fish and amphibians. Historically, the range of this snake was the San Joaquin Valley from the vicinity of Sacramento and Antioch southward to Buena Vista and the Tulare Lake Basin. The current distribution extends from near Chico in Butte County, to the vicinity of Burrell in Fresno County (CDFG 2000).

Within the study area, known populations of giant garter snake occur along the north section of the proposed pipeline route, as well as both east and west of the southern portion of the route. Freshwater marsh habitat in the Cosumnes River Preserve and the more naturalized irrigation ditches along the proposed pipeline route could also provide suitable habitat for this State and federally-listed threatened species.

Birds

Cooper's hawk (*Accipiter cooperii*)

Cooper's hawks nest in dense forested habitats near freshwater and forage mostly on small birds and mammals, although they will take reptiles and amphibians. Peak breeding season is May through July, although it can occur anywhere from March to August (Zeiner et al. 1988-1990). Cooper's hawks use dense wooded stands for breeding and patchy to open woodlands and habitat edges for foraging. They can often be found in live oak and riparian deciduous habitats. Other habitats used frequently include forested habitats near water (Zeiner et al. 1988-1990).

1 Currently, breeding populations are restricted to the southern Sierra Nevada foothills,
2 New York Mountains, Owens Valley, and other local areas in southern California. After
3 breeding, Cooper's hawks from the north migrate to winter throughout woodlands in
4 California. Their elevation range is anywhere from sea level to 9,000 feet above mean
5 sea level (Zeiner et al. 1988-1990).

6 In the study area, suitable nesting habitat for the Cooper's hawk is present in the
7 riparian woodland habitat in the Cosumnes River Preserve. The grasslands and
8 agricultural fields represent suitable foraging habitat.

9 Tricolored Blackbird (*Agelaius tricolor*)

10 Tricolored blackbirds are a colonial species that nest in dense vegetation in and around
11 freshwater wetlands. They are opportunistic foragers, during the breeding season
12 consuming mostly small animal material, such as insects; whereas in the non-breeding
13 season they consume seeds and cultivated grain (Hamilton 2004; Zeiner et al. 1988-
14 1990).

15 Breeding season is usually mid-April to late-July, and in the Sacramento Valley large
16 post breeding roosts form from late June through August (Hamilton 2004). During
17 breeding, tricolored blackbirds require freshwater wetland areas large enough to
18 support colonies of 50 pairs or more. They prefer freshwater emergent wetlands with
19 tall, dense cattails or tules for breeding, but will also breed in thickets of willow (*Salix*
20 *spp.*), blackberry, wild rose, or tall herbs. During the non-breeding season flocks are
21 highly mobile and forage in grasslands, croplands, and wetlands (Zeiner et al. 1988-
22 1990). Tricolored blackbirds are locally common throughout the Central Valley.
23 Historically, they were restricted to California and northern Baja California, and
24 generally found in the valleys and areas with agricultural production (Zeiner et al. 1988-
25 1990).

26 Freshwater marsh in the Cosumnes River Preserve and the more naturalized drainages
27 that cross the proposed pipeline route could provide suitable foraging and nesting habitat
28 for this species. Post-breeding and fall foraging could also occur on agricultural cropland,
29 irrigated pasture, and dairy feedlots (Hamilton 2004) that are present in the proposed
30 Project area.

Burrowing Owl (*Athene cunicularia*)

The burrowing owl is a small diurnal owl that nests underground in the burrows of small mammals, especially those of ground squirrels. Culverts and other human-made structures may also be suitable habitat for the burrowing owl. Often a burrowing owl will occupy several burrows in an area. In the Central Valley, the burrowing owl is a year-round resident of open spaces such as grasslands, agricultural fields, air fields, and levees. Vegetation must be very short or very sparse to be suitable habitat for burrowing owl. Breeding peaks from April to May, but can occur from March to August. The burrowing owl forages on insects and small mammals and will also consume reptiles, birds, and carrion (Zeiner et al. 1988 -1990).

Grasslands and open ruderal habitats within the study area could provide suitable foraging habitat for this species. Ground squirrel or other small mammal burrows in the study area provide nesting habitat for the burrowing owl.

Swainson's Hawk (*Buteo swainsoni*)

The Swainson's hawk is a long-distance migrant species. The Central Valley population winters primarily in Mexico and arrives on their breeding grounds in the Central Valley in mid-March to early April. Nests are generally found in scattered trees or along riparian systems adjacent to agricultural fields or pastures, but the species will also nest in tall shrubs and trees in proximity to developments near foraging habitat. Prey species mainly include small mammals, reptiles, and insects. Egg-laying generally occurs in April and young hatch in May and June. Most young have fledged the nest by the end of July and are relatively independent of parental protection. However, fledged young remain with their parents until they migrate in the fall. Migration to the wintering grounds generally occurs around September. Some individuals or small groups may winter in California (Zeiner et al. 1988–1990).

The grasslands and agricultural fields within the study area represent suitable foraging habitat for Swainson's hawk. Potential nesting habitat is present mainly in the riparian woodland within the Cosumnes River Preserve.

White-tailed kite (*Elanus leucurus*)

The white-tailed kite is a year-round resident in central California. It typically nests in oak woodlands or trees, especially along marshes or river margins and may use any suitable tree or shrub that is of moderate height. Its nesting season may begin as early as February and extend into August. This raptor forages during the day for rodents,

1 especially voles, in wet or dry grasslands and fields (Zeiner et al. 1988 - 1990). White-
2 tailed kites forage characteristically by hovering over the location of a potential prey
3 item.

4 The grasslands and agricultural fields within the study area represent suitable foraging
5 habitat for the white-tailed kite. Potential nesting habitat is primarily in the riparian
6 woodland within the Cosumnes River Preserve.

7 Double-crested cormorant (*Phalacrocorax auritus*)

8 Double-crested cormorants are large waterbirds with webbed feet, a long neck, and a
9 long, curved bill that they use to catch prey while swimming underwater (Elphick et. al.
10 2001). This species is highly adapted to aquatic environments, and can be found on
11 inland lakes and rivers and in coastal marine habitats. Double-crested cormorants nest
12 along the coast on sequestered islets usually on ground with sloping surface, or in tall
13 trees along lake margins. Nesting sites are often situated in mixed colonies with other
14 seabirds or herons (Elphick et. al. 2001).

15 In the study area, suitable habitat for this State species of special concern is present in
16 the riparian woodlands and associated open water habitats of the Cosumnes River
17 Preserve.

18 *Plants*

19 Suisun Marsh Aster (*Aster lentus*)

20 Suisun Marsh aster is a perennial herb, blooming May through November. A species
21 endemic to the Sacramento/San Joaquin River Delta, the Suisun Marsh aster is most often
22 seen along sloughs with reeds, bulrush, blackberry and cattails in brackish and freshwater
23 marshes and swamps. Threats to this plant include marsh habitat alteration and loss.
24 Potential suitable habitat for this species occurs in marshes primarily within the Cosumnes
25 River Preserve, but could also occur in marsh habitats along any of the more naturalized
26 drainages that cross the proposed pipeline route north of the Preserve. Suisun Marsh
27 aster is a CNPS list 1B (rare, threatened, or endangered in California and elsewhere)
28 species with no State or Federal status.

29 Bristly sedge (*Carex comosa*)

30 Bristly sedge is a grass-like perennial that grows to 40 inches tall, and produces seeds on
31 long, nodding stalks. It blooms from May through September and is found throughout the

northern half of California in a variety of habitats including coastal prairie, marshes, swamps, and valley and foothill grasslands (CNPS 2007). It is threatened primarily by alternation of its habitat by marsh drainage. Elevations range from sea level to 2,050 feet above mean sea level. Potential suitable habitat for this species occurs in marshes primarily within the Cosumnes River Preserve, but could also occur in marsh habitats along any of the drainages that cross the proposed pipeline route north of the Preserve, or in the wet areas in grasslands within the Stone Lakes National Wildlife Refuge. Bristly sedge is a CNPS list 2.1 (i.e., rare, threatened, or endangered in California, but more common elsewhere) species with no State or Federal status.

Dwarf downingia (*Downingia pusilla*)

Dwarf downingia is a small annual herb in the bell-flower family (*Campanulaceae*) that blooms from March through May (CNPS 2007). The range of this species extends from the southern Sacramento Valley through the northern and central San Joaquin Valley and east to Napa and Sonoma counties. This species is primarily associated with vernal pools, but has been known to grow in roadside ditches (Hickman 1993). Dwarf downingia is known to occur within the study area, in the vernal pool grasslands within the Stone Lakes National Wildlife Refuge (PG&E 2006b). This plant is a CNPS List 2.2 species with no Federal or State status.

Bogg's Lake hedge-hyssop (*Gratiola heterosepala*)

Boggs Lake hedge-hyssop is a tiny annual herb in the figwort family (*Scrophulariaceae*) that blooms from April through August (CNPS 2007). Occurrences of this species range from the inner north coast range to the Sacramento Valley and central Sierra Nevada foothills to the Modoc Plateau (Hickman 1993). This species grows in shallow waters along the edges of lakes and vernal pools, and could potentially occur within the study area, in the vernal pool grasslands of the Stone Lakes National Wildlife Refuge. Boggs Lake hedge-hyssop is a CNPS List 1B.2 species and is state-listed as endangered.

Rose-Mallow (*Hibiscus lasiocarpus*)

Rose-mallow is a three- to six-foot tall perennial herb in the mallow family (*Malvaceae*) that blooms from June through September (Hickman 1993, CNPS 2007). This species occurs in the Sacramento Valley and the northern part of the San Joaquin Valley. This emergent wetland plant grows on the margins of freshwater marshes, wet riverbanks, and on low islands in sloughs. Known associates include Fremont cottonwood (*Populus fremontii*), willow species, and button willow (*Cephalanthus occidentalis*). Two CNDDDB occurrences

are present at the south end of the proposed pipeline route in the Cosumnes River Preserve (CDFG 2007). Potential habitat for this species could also occur in marsh habitats along any of the more naturalized drainages that cross the proposed pipeline route north of the Preserve. Rose-mallow is a CNPS List 2.2 species with no State or Federal status.

Delta Tule Pea (*Lathyrus jepsonii* var. *jepsonii*)

The Delta tule pea is found in freshwater and brackish marshes and seasonal wetlands with cattails, Suisun Marsh aster (*Cephalanthus occidentalis*), and rushes (*Juncus* spp). Most of its distribution is restricted to the Sacramento/San Joaquin River delta at elevations of sea level to about 15 feet. Its blooming period is from May through September. The Delta tule pea is threatened by agriculture, water diversions, and erosion. Seasonal wetland and freshwater marsh habitats found along the proposed pipeline route within the Cosumnes River Preserve could provide suitable habitat for this species. Delta tule pea is a CNPS list 1B plant with no State or Federal status.

Legenere (*Legenere limosa*)

Legenere is a diminutive annual herb in the bell-flower family that typically blooms from April through June (CNPS 2007). This species occurs in the southern portions of the northern Coast Range, southern Sacramento Valley, northern San Joaquin Valley, and the Santa Cruz mountains. It generally grows in the lower-lying portions of vernal pools. Legenere is known to occur in the study area, in the vernal pool grasslands of the Stone Lakes National Wildlife Refuge (PG&E 2006b). Legenere is a CNPS List 1B.1 species, but has no State or Federal status.

Mason's Lilaeopsis (*Lilaeopsis masonii*)

Mason's lilaeopsis is found in tidal freshwater and brackish marshes and riparian scrub, with muddy or silty soil formed through river deposition or riverbank erosion. Endemic to California, Mason's lilaeopsis is known to occur in six counties. Threats are many and include erosion, channel stabilization, developing flood control projects, recreation, agriculture, shading resulting from marsh succession, and competition with non-native plants. Elevations range from sea level to about 35 feet above mean sea level. It blooms from April through November. Potential habitat for this species occurs primarily in marshes within the Cosumnes River Preserve, but could also occur in marsh habitats along any of the more naturalized drainages that cross the proposed pipeline route north of the Preserve. Mason's lilaeopsis is State-listed as rare, and a CNPS list 1B plant.

1 Delta Mudwort (*Limosella subulata*)

2 Delta mudwort is found on mud banks of the Sacramento/San Joaquin River Delta in
3 marshy or scrubby riparian associations, often with Mason's lilaepsis (*Lilaeopsis*
4 *masonii*). Its blooming period is from May through August. Its elevation range is sea level
5 to about 15 feet above mean sea level. The main threat to delta mudwort is habitat
6 destruction. Freshwater emergent marsh found in Cosumnes River Preserve and the
7 more naturalized irrigation ditches along the proposed pipeline route could provide suitable
8 habitat for this species. Delta mudwort is a CNPS list 2.1 plant, with no State or Federal
9 status.

10 Slender orcutt grass (*Orcuttia tenuis*)

11 Slender orcutt grass is a small tufted annual herb in the grass family (*Poaceae*) that
12 typically flowers from May through September (CNPS 2007). The range of this species is
13 primarily limited to the inner north Coast Ranges, the Cascade Range foothills, and the
14 Modoc Plateau, but it is also known to occur in Sacramento County. Within this range,
15 orcutt grass is restricted to vernal pools. This species could potentially occur within the
16 study area, in the vernal pool grasslands of the Stone Lakes National Wildlife Refuge.
17 Slender orcutt grass is federally listed as threatened, State-listed as endangered, and it is
18 also a CNPS List 1B.1 species.

19 Sacramento orcutt grass (*Orcuttia viscida*)

20 Sacramento orcutt grass is a small sticky and strongly aromatic annual herb in the grass
21 family that typically flowers from April through June (Hickman 1993, CNPS 2007). The
22 range of this species is limited to Sacramento County. Within this range, orcutt grass is
23 restricted to vernal pools. This species could potentially occur within the study area, in the
24 vernal pool grasslands of the Stone Lakes National Wildlife Refuge. Slender orcutt grass
25 is federally and State-listed as endangered, and is a CNPS List 1B.1 species.

26 Sanford's arrowhead (*Sagittaria sanfordii*)

27 Sanford's arrowhead is an emergent perennial herb in the water-plantain family
28 (*Alismataceae*). The species has linear to ovate leaves that are three-angled, and it
29 blooms from May through October (Hickman 1993; CNPS 2007). Sanford's arrowhead
30 generally occurs in standing or slow-moving freshwater ponds, marshes, and ditches.
31 Common associated species include smartweed (*Polygonum* spp.), water plantain (*Alisma*
32 *plantago-aquatica*), water primrose (*Ludwigia peploides*), broad-leaved cattail, and

1 duckweed (*Lemna* sp.) (CDFG 2007). The historic distribution of this species included Del
2 Norte County, the Central Valley, and Ventura County, but the species has been mostly
3 extirpated from the Central Valley (Hickman 1993). Potential habitat for this species
4 occurs primarily in marshes within the Cosumnes River Preserve, but could also occur in
5 marsh habitats along any of the more naturalized drainages that cross the proposed
6 pipeline route north of the Preserve. Sanford's arrowhead is a CNPS List 1B.2 species
7 with no State or Federal status.

8 Blue skullcap (*Scutellaria lateriflora*)

9 Blue skullcap is a perennial rhizomatous herb in the *Lamiaceae* family. It is found in wet
10 meadows, marshes, seeps, and swamps, from sea level to 500 feet in elevation. In
11 California, its habitat distribution is in the north San Joaquin Valley, and east of the Sierra
12 Nevada (Hickman 1993). This species blooms from July to September and produces
13 inflorescences in several racemes from axils of the leaves. The bilaterally symmetrical
14 flowers are generally a light blue and are slightly greater than one-quarter-inch (Hickman
15 1993). Freshwater emergent marsh found in Cosumnes River Preserve and the more
16 naturalized irrigation ditches along the proposed pipeline route could provide suitable
17 habitat for this species. Blue skullcap is a CNPS List 2.2 species with no State or Federal
18 status.

19 **Invasive and Non-Native Plant Species**

20 During the plant field surveys that were performed by Garcia and Associates during
21 spring 2005, 181 plant species were identified (PG&E 2006c). Of the total species
22 identified, 39 plant species are listed on the California Invasive Plant Council (Cal-IPC)
23 Invasive Plant Inventory (Cal-IPC 2007). Many of these plants are found in the
24 agricultural, annual grassland, and ruderal habitats in the study area, with generally
25 fewer invasive plants present in the wetland habitats. The species with moderate or
26 high rating levels in the Cal-IPC inventory are bridal creeper (*Asparagus asparagoides*),
27 slender wild oat (*Avena barbata*), wild oat (*Avena fatua*), black mustard (*Brassica nigra*),
28 ripgut brome (*Bromus diandrus*), Italian thistle (*Carduus pycnocephalus*), yellow
29 starthistle (*Centaurea solstitialis*), bull thistle (*Cirsium vulgare*), bermudagrass (*Cynodon*
30 *dactylon*), fennel (*Foeniculum vulgare*), shortpod mustard (*Hirschfeldia incana*),
31 Mediterranean barley (*Hordeum marinum*), hairy dandelion (*Hypochaeris radicata*),
32 perennial pepperweed (*Lepidium latifolium*), Italian ryegrass (*Lolium multiflorum*),
33 Uruguay water-primrose (*Ludwigia hexapetala*), pennyroyal (*Mentha pulegium*),
34 Himalaya blackberry (*Rubus discolor*), red sorrel (*Rumex acetosella*), medusahead

1 (*Taeniatherum caput-medusae*), hedgeparsley (*Torilis arvensis*), rose clover (*Trifolium*
 2 *hirtum*), and rattail fescue (*Vulpia myuros*).

3 **4.1.2 Regulatory Setting**

4 **Federal**

5 *U.S. Army Corps of Engineers*

6 At the Federal level, “waters of the United States” are regulated by the U.S. Army Corps
 7 of Engineers (USACE) under Section 404 of the Clean Water Act. The term “waters of
 8 the United States” is defined in the Code of Federal Regulations (33 CFR 328.3[a]; 40
 9 CFR 230.3[s]), and includes waters that could be used in interstate or foreign
 10 commerce, interstate wetlands, and other waters such as intrastate lakes, rivers,
 11 streams (including intermittent streams), mud flats, sand flats, sloughs, wet meadows,
 12 playa lakes, or natural ponds, where the use, degradation, or destruction of which could
 13 affect interstate or foreign commerce.² Waters of the United States do not include prior
 14 converted cropland, stock watering ponds, and agricultural irrigation ditches created in
 15 upland areas. Wetlands are defined by the Federal government (CFR, Section
 16 328.3(b), 1991) as those areas that are inundated or saturated by surface or
 17 groundwater at a frequency and duration sufficient to support, and that under normal
 18 circumstances do support, a prevalence of vegetation typically adapted for life in
 19 saturated soil conditions.

20

21 *U.S. Fish and Wildlife Service*

22 The USFWS administers the Migratory Bird Treaty Act (MTBA) (16 USC Section 703-
 23 711), the Bald and Golden Eagle Protection Act (16 USC Section 668), and the Federal
 24 Endangered Species Act (FESA) (ESA, 16 USC Section 153, *et seq.*). Projects that
 25 would result in adverse affects on any federally listed threatened or endangered species
 26 are required to consult with and mitigate through consultation with the USFWS. This

² Since the Solid Waste Agency of Northern Cook County (SWANCC) decision (SWANCC v. USACE), waters covered solely by this definition by virtue of their use as habitat by migratory birds are no longer considered “waters of the United States.” The Supreme Court’s opinion did not specifically address what other connections with interstate commerce might support the assertion of CWA jurisdiction over “nonnavigable, isolated, intrastate waters” under this definition, and the USACE is recommending case by case consideration. A factor that may be relevant to this consideration includes, but is not limited to, the following: jurisdiction of isolated, intrastate, and nonnavigable waters may be possible if their use, degradation, or destruction could affect other “waters of the United States,” thus establishing a significant nexus between the water in question and other “waters of the United States” (USACE and USEPA 2001).

consultation can be pursuant to either Section 7 or Section 10 of the ESA, depending on the involvement by the Federal government.

National Marine Fisheries Service

The National Marine Fisheries Service (NMFS) administers FESA for marine fish species, including anadromous salmonids such as steelhead. Projects for which a federally listed marine fish species and/or its habitat are present must receive authorization from NMFS. A Section 10(a) Endangered Species Incidental Take Permit would be necessary when the “taking” or harming of a species is incidental to the lawful operation of a project.

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended, requires that Essential Fish Habitat (EFH) be identified and described in Federal fishery management plans (FMPs). Federal action agencies must consult with NMFS on any activity which they fund, permit, or carry out that may adversely affect EFH. NMFS is required to provide EFH conservation and enhancement recommendations to the Federal action agencies.

EFH is defined as those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity. For the purposes of interpreting the definition of EFH, “waters” includes aquatic areas and their associated physical, chemical, and biological properties that are used by fish, and may include areas historically used by fish where appropriate; “substrate” includes sediment, hard bottom, structures underlying the waters, and associated biological communities; “necessary” means habitat required to support a sustainable fishery and a healthy ecosystem; and “spawning, breeding, feeding, or growth to maturity” covers all habitat types used by a species throughout its life cycle.

The proposed Project area is within the region identified as EFH for Pacific salmon, including Chinook salmon, in Amendment 14 of the Pacific Salmon FMP.

State

California Department of Fish and Game

CDFG administers a number of laws and programs designed to protect fish and wildlife resources. Principal of these is the California Endangered Species Act of 1984 (CESA – Fish and Game Code Section 2050, *et seq.*), which regulates the listing and “take” of endangered (CE) and threatened species (CT). A “take” of such a species may be

permitted by CDFG through issuance of permits pursuant to Fish and Game Code Section 2081.

Prior to enactment of CESA, the designation of "Fully Protected" was used by CDFG to identify species that had been given special protection by the California Legislature by a series of statutes in the California Fish and Game Code (CFGF). (See CFGF §§ 3503.5, 3505, 3511, 3513, 4700, 4800, 5050, 5515). Many Fully Protected species have also been listed as threatened or endangered species under the more recent endangered species laws and regulations; however, the original statutes have not been repealed, and the legal protection they give the species identified within them remains in place. Fully Protected species may not be taken or possessed at any time; and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock. Because endangered or threatened species can be "taken" for development purposes with the issuance of a permit by CDFG, Fully Protected species have a greater level of legal protection than "listed" species.

CDFG maintains lists for Candidate-Endangered Species (SCE) and Candidate-Threatened Species (SCT). California candidate species are afforded the same level of protection as listed species. California also designates Species of Special Concern (CSC) which are species of limited distribution, declining populations, diminishing habitat, or unusual scientific, recreational, or educational value. These species do not have the same legal protection as listed species or Fully Protected species but may be added to official lists in the future. The CSC list is intended by CDFG as a management tool for consideration in future land use decisions. The CFGF includes provisions for the protection of the nests of particular types of birds, including birds of prey (CFGF Section 3503.5).

The State's authority in regulating activities in waters of the U.S. resides primarily with the CDFG and the State Water Resources Control Board (SWRCB). CDFG is also authorized under the CFGF Sections 1600 through 1607 to develop mitigation measures and enter into Streambed Alteration Agreements with applicants who propose projects that would obstruct the flow of, or alter the bed, channel, or bank of a river or stream in which there is a fish or wildlife resource, including intermittent and ephemeral streams. The SWRCB, acting through the Regional Water Quality Control Board (RWQCB), must certify that an USACE permit action meets State water quality objectives (Section 401, Clean Water Act).

1 **Local**

2 *Sacramento County*

3 The majority of the study area is located in Sacramento County, California. The
4 applicable Sacramento County plans and ordinances are described below.

5 Sacramento County General Plan

6 The Sacramento County General Plan (Sacramento County 1993) provides the
7 following policies relevant to the proposed Project, as related to biological resources:

8 CO-62. Ensure no net loss of marsh and riparian woodland acreage, values or
9 functions.

10 CO-65. In any cases where complete or selective removal of riparian woodland or
11 scrub habitat is necessary for channel maintenance, public safety, or
12 installation of infrastructure, it will be planned and carried out, or mitigated, so
13 as to minimize unavoidable impacts to biological resources.

14 CO-70. Public or private projects involving filling or removal of marsh/riparian habitat
15 shall be mitigated outside of natural preserves where on-site mitigation is not
16 desirable or appropriate and shall be mitigated through the purchase of
17 mitigation credits for restored wetlands/riparian areas at no net loss.

18 CO-83. Ensure no net loss of vernal pool acreage, and/or values and functions, and
19 mitigate any loss in relation to the values of quality of habitat.

20 CO-84. Evaluate feasible onsite alternatives in the environmental review process that
21 reduce impacts on vernal pools and provide effective on-site preservation in
22 terms of minimum management requirements, effective size, and evaluation
23 criteria identified in the report "Sacramento County Vernal Pools" (1990).

24 CO-86. When on-site preservation or mitigation is infeasible or undesirable, require off-
25 site mitigation at County-approved mitigation banks within Sacramento County.

26 CO-87. Mitigation for vernal pool loss shall be considered in the environmental review
27 process, and mitigation shall be required based on information contained within
28 the environmental documents on the quality of those resources and their ability
29 to be sustained within an urban setting.

CO-130. Make every effort to protect and preserve non-oak native, excluding cottonwoods, and landmark trees and protect and preserve native oak trees measuring 6 inches in diameter at 4.5 feet above ground in urban and rural areas, excluding parcels zoned exclusively for agriculture.

Sacramento County Tree Ordinance

Sacramento County's Tree Ordinance (SCC 480 § 1, 1981) requires project proponents to obtain a permit from the Director of Public Works if the project will trench, grade, or place fill within the dripline of any oak or landmark tree, or will remove any tree in a designated urban area (Sacramento County 1981). The ordinance is designed to protect living native oak trees that have at least one trunk six inches or more in diameter at breast height (dbh, defined as 4.5 feet above ground level), living native oaks with an aggregate diameter of at least 10 inches in dbh, and landmark trees.

Sacramento County Swainson's Hawk Ordinance

Sacramento County's Swainson's Hawk Ordinance establishes requirements and guidelines for the mitigation of Swainson's hawk (*Buteo swainsoni*) foraging habitat within the unincorporated areas of the county (Sacramento County 2006). This ordinance applies to projects five acres or greater that are not within an approved Habitat Conservation Plan area and have been determined through the CEQA process to result in a significant impact or significant cumulative impact to Swainson's hawk foraging habitat.

Sacramento County Habitat Conservation Plan

The South Sacramento Habitat Conservation Plan (SSHCP) is under development to address issues related to urban development, habitat conservation, and agricultural protection. The SSHCP will provide coverage for 46 species of plants and wildlife including 12 species listed as threatened or endangered under the State or Federal Endangered Species Acts (Sacramento County 2007). The area covered by the SSHCP includes the unincorporated portions of the county bounded by Highway 50 to the north, the county line to the east and south (excluding the Delta), and Interstate 5 to the west. Sacramento County is also seeking to partner with the incorporated cities of Elk Grove, Rancho Cordova, and Galt to further advance the regional planning goals of the SSHCP. The SSHCP will consolidate environmental efforts to protect and enhance wetlands (primarily vernal pools) and upland habitats to provide ecologically viable conservation areas, minimize regulatory hurdles, and streamline the permitting process for projects that

engage in development activities. However, the SSHCP has not yet been adopted. Until the SSHCP is adopted, PG&E would be required to determine if potential habitat for State or federally-listed species is present in these areas, and if so, consult with the CDFG and/or USFWS to determine the significance of potential impacts on listed plants and wildlife, and to develop appropriate mitigation measures.

San Joaquin County

The southern part of the study area is located in the unincorporated area of San Joaquin County. The applicable San Joaquin County plans are described below.

San Joaquin County General Plan

The following objectives and policies related to biological resources from the San Joaquin County General Plan (San Joaquin County 1992) were considered in this analysis:

Vegetation, Fish and Wildlife Habitat Objectives (Chapter VI)

1. To protect and improve the County's vegetation, fish, and wildlife resources.
2. To provide undeveloped open space for nature study, protection of endangered species, and preservation of wildlife habitat.

Resource Protection and Management Policies (Chapter VI)

1. Resources of significant biological and ecological importance in San Joaquin County shall be protected. These include wetlands; riparian areas; rare, threatened and endangered species and their habitats as well as potentially rare or commercially important species; vernal pools; significant oak groves and heritage trees (see Table VI-1 of the general plan).
2. No public action shall significantly diminish the wildlife and vegetative resources of the County; cumulatively significant impacts shall be avoided.
3. The County shall encourage the protection of those habitat areas that are of a size or quality so that they are no more than minimally affected by adjacent development. Connection of habitat areas shall be encouraged.
5. No net loss of riparian or wetland habitat or values shall be caused by development.
6. Development projects which have the potential to destroy wetlands shall not be permitted, unless:

- (a) no suitable alternative site exists for the land use, and the use is considered necessary to the public;
 - (b) there is no degradation of the habitat or numbers of any rare, threatened, or endangered plant, or animal species as a result of the project; and
 - (c) habitat of superior quantity and superior or comparable quality will be created or restored to compensate for the loss.
7. The county shall support feeding areas and winter habitat for migratory waterfowl.
 8. Strips of land along waterways shall be protected for nesting and foraging habitat and for protection of waterway quality.
 11. Fisheries shall be protected by:
 - (a) reducing the level of pesticides and fertilizers and other harmful substances in agricultural and urban runoff;
 - (b) designing and timing waterway projects to protect fish populations; and
 - (c) operating water projects to provide adequate flows for spawning of anadromous fish.

Implementation (Chapter VI)

1. Natural Diversity Database. The Natural Diversity Database shall be used to determine location of significant species for environmental assessment of projects. (Planning).
2. Trees. The County shall:
 - (a) adopt regulations to protect native oaks and heritage trees; and
 - (b) require street trees as a condition of residential development. (Planning).
3. Species Protection. The County shall:
 - (a) prepare and adopt regulations to protect special status taxa;
 - (b) address protection and preservation of special status taxa in review of development applications; and
 - (c) work with the California Department of Fish and Game to develop methods to save listed species such as the Swainson's Hawk. (Planning).
4. Habitat Protection, Preservation, and Restoration Program.
 - (a) The County shall develop and implement, with the California Department of Fish and Game, a program to protect, restore, and

1 manage wildlife and habitat resources. The project shall include
2 establishment of financing by project mitigation funds. (Planning).

- 3 (b) The County shall support habitat conservation and restoration plans for
4 special-status taxa and shall work with the California Department of
5 Fish and Game and other agencies or organizations in developing
6 such plans (Planning).

7
8 San Joaquin County Multi-Species Habitat Conservation and Open Space Plan

9 San Joaquin County and other participating agencies have prepared the San Joaquin
10 Multi-Species Habitat Conservation and Open Space Plan (SJMSCP) with the goal of
11 protecting special-status plants and wildlife and their habitats, while allowing for planned
12 growth in the county (San Joaquin County 2001). This protection is accomplished through
13 identification of important habitats and habitat features to aid in the development of
14 protection areas, and the establishment of funding mechanisms through which project
15 proponents can provide replacement habitat while enabling them to meet their no net loss
16 of habitat value goals. SJMSCP participants under the SJMSCP may conduct SJMSCP
17 permitted activities that result in or could result in “incidental take” of listed species and
18 other unlisted species should they become listed.

19 San Joaquin County Tree Ordinance

20 The county’s Natural Resources Regulations (Division 15 of the Title 9 Development
21 Title of San Joaquin County) contain provisions to preserve the county’s tree resources.
22 The removal of a native oak, heritage oak tree, or historical tree requires a replacement
23 of the tree subject to requirements described in Section 9-1505.4. Native oaks are
24 defined as valley oaks (*Quercus lobata*) with stem diameters of 6 to 32 inches dbh for
25 single-trunk trees and a minimum combined trunk diameter of eight inches dbh for multi-
26 trunk trees; and interior live oaks or blue oaks with stem diameters of four to 32 inches
27 dbh for single-trunk trees and a minimum combined diameter of six inches dbh for multi-
28 trunk trees. Heritage oaks are defined as native oaks with a single-trunk diameter of 32
29 inches dbh or greater. Historical trees are defined as any tree or group of trees given
30 special recognition by the County Planning Commission because of size, age, location,
31 or history.

Stone Lakes National Wildlife Refuge

Stone Lakes National Wildlife Refuge Perpetual Conservation Easement Grant

The Laguna Stonelake LLC, a California Limited Liability Company, established a perpetual conservation easement grant in favor of The Habitat Management Foundation. The easement covers approximately 1,395 acres (Protected Property) that possesses significant ecological and habitat values that benefit endangered, threatened, and other rare species (Collectively, "Conservation Values"). These values include natural open space, grasslands, vernal pools, other wetlands, and habitat for listed vernal pool crustaceans. The purpose of the easement is to assure that the Protected Property will be retained forever in a natural and open space condition and to prevent any use of the Protected Property that will impair or interfere with the Conservation Values of the Protected Property. Additional uses and practices could be allowed with approval from the USACE through the issuance of a Clean Water Act permit and the USFWS through the issuance of a Biological Opinion.

Cosumnes River Preserve

Cosumnes River Preserve Cooperative Management Agreement

The U.S. Bureau of Land Management, the CDFG, Ducks Unlimited, the Sacramento County Department of Parks & Recreation, the Nature Conservancy, and the California Department of Water Resources entered into a Cooperative Management Agreement for the purpose of managing and administering all portions of lands within the Cosumnes River Preserve as a single ecological unit for the protection, restoration, and maintenance of plants and wildlife. Additionally, the agreement accommodates and facilitates research, teaching, nature study and appreciation, historical and cultural interpretation, and other compatible recreational, educational, and scientific activities that are appropriate to the Preserve without detrimentally impacting its intrinsic ecological and wildlife values.

4.1.3 Significance Criteria

An adverse impact on biological resources is considered significant and would require mitigation as specified below.

Wetlands

An adverse impact on wetlands is considered significant and would require mitigation if Project construction or operation activities would:

- Fill or alter a wetland or vernal pool, resulting in a long-term change in its hydrology or soils, or the composition of vegetation of a unique, rare, or special concern wetland community;
- Remove or significantly prune overstory tree species in a manner that would affect wetland functions related to bank stabilization, stream temperature, or habitat; or
- Cause short- or long-term violations of Federal or State water quality standards for streams that lead to wetlands, measured as in-stream elevated turbidity readings or decreased dissolved oxygen (DO) levels.

Vegetation

An adverse impact on vegetation is considered significant and would require mitigation if Project construction or operation activities would:

- Disturb a substantial portion of the vegetation type within a local region to the point where natural or enhanced regeneration could not restore vegetation to its pre-construction condition within one to three years;
- Result in the long-term (more than three years) reduction or alteration of unique, rare, or special concern vegetation types, riparian vegetation, or natural communities;
- Introduce new, or lead to the expanded range of existing, invasive noxious weed species or soil pests, so that they interfere with crop production or successful revegetation of natural communities;
- Create substantial barriers for dispersal of native plant species; or
- Result in a spill or leak that would contaminate the soil to the extent of eradicating the existing vegetation, inhibiting revegetation, or migrating to other areas and affecting soil and water ecology via erosion and sedimentation.

Wildlife and Aquatic Resources

An adverse impact on wildlife and aquatic resources is considered significant and would require additional mitigation if project construction or operation would:

- Change the diversity or substantially alter the numbers of a local population of any wildlife or aquatic species, or interfere with the survival, growth, or reproduction of affected wildlife and fish populations;
- Substantially interfere with the movement or range of migratory birds and other wildlife, or the movement, range, or spawning of any resident or anadromous fish;

- Result in a substantial long-term loss of existing wildlife or aquatic habitat;
- Cause substantial deterioration of existing fish habitat;
- Introduce new, invasive wildlife or aquatic species to an area; or
- Create a potential health hazard or involve the use, production, or disposal of materials in a manner that would be expected to pose a hazard to wildlife or fish populations in the project area.

Threatened, Endangered, and Special-Status Species

An adverse impact on federally or State-listed species (including species of special concern) or species proposed for listing is considered significant and would require mitigation if Project construction or operation activities would:

- Reduce the abundance of sensitive species, including species under the protection of the MTBA, that occur within the Project area;
- Result in the loss or alteration of existing or proposed critical habitat for one or more listed species;
- Cause a temporary loss or alteration of habitat important for one or more listed species that could result in avoidance by a listed species, or that could cause increased mortality or lowered reproductive success of the species;
- Result in direct or indirect impacts on candidate or sensitive species populations, or their habitat, that would contribute to or result in the Federal or State listing of the species (e.g., substantially reducing species numbers or resulting in the permanent loss of habitat essential for the continued existence of a species); or
- Create a potential health hazard or involve the use, production, or disposal of materials that pose a hazard to a special-status species population in the Project area.

4.1.4 Impact Analysis and Mitigation

Applicant Proposed Measures (APMs) have been identified by PG&E in its Environmental Analysis prepared for the CSLC. APMs that are relevant to this section are presented below. This impact analysis assumes that all APMs would be implemented as defined below. Additional mitigation measures are recommended in this section if it is determined that APMs do not fully mitigate the impacts for which they are presented.

APM BIO-1. Worker Environmental Awareness Program. PG&E shall conduct Worker Environmental Awareness Program (WEAP) training for

construction crews (primarily crew and construction foreman) before construction activities begin. The WEAP shall include a brief review of the special status species and other sensitive resources that could occur in the proposed Project site (including their life history and habitat requirements and what portions of the proposed Project area they may be found in) and their legal status and protection. The program shall also cover all mitigation measures, environmental permits and proposed Project plans, such as the Stormwater Pollution Prevention Plan (SWPPP), best management practices (BMPs), erosion control and sediment plan, and any other required plans. During WEAP training, construction personnel shall be informed of the importance of avoiding ground-disturbing activities outside of the designated work area. The designated environmental inspector shall be responsible for ensuring that construction personnel adhere to the guidelines and restrictions. WEAP training sessions shall be conducted as needed for new personnel brought onto the job during the construction period.

APM BIO-2. Protective Fencing. Prior to any construction activities on the site, a protective fence shall be installed by PG&E a minimum of 10 feet (if feasible) from the edge of all special status plant populations or suitable habitat to be avoided in the immediate vicinity of the proposed construction areas. Prior to initiation of construction activities, a qualified biologist shall inspect the protective fencing to ensure that all special status plant populations have been appropriately protected. No encroachment into fenced areas shall be permitted during construction and the fence shall remain in place until all construction activities have been completed.

APM BIO-3. Wetland Protection.

(a) Avoidance

Where feasible all wetland features shall be avoided with the use of HDD or hammer bore techniques.

(b) Compensation

The following or equally effective compensation measures shall be implemented by PG&E as determined in consultation with the USFWS.

For every acre of habitat directly or indirectly affected, at least two vernal pool preservation credits shall be dedicated within a USFWS-approved ecosystem preservation bank, or, based on USFWS evaluation of site-specific conservation values, three acres of vernal pool habitat may be preserved on the Project site (see part (c) below).

For every acre of habitat directly affected, at least one vernal pool creation credit will be dedicated within a USFWS-approved habitat mitigation bank, or, based on USFWS evaluation of site specific conservation values, two acres of vernal pool habitat will be created and monitored on the Project site or on another non-bank site as approved by the USFWS.

(c) Preservation

If habitat and its watershed is avoided (preserved) on site, a USFWS-approved biologist (monitor) shall inspect any construction-related activities at the proposed Project site to ensure that no unnecessary take of listed species or destruction of their habitat occurs. The biologist shall have the authority to stop all activities that the biologist deems may result in such a take or destruction until appropriate corrective measures have been completed. The biologist also shall immediately report any unauthorized impacts to the USFWS, the CDFG, and the CSLC.

(d) Reduction/Avoidance

In areas where complete avoidance, or buffer areas are not possible (e.g., the pullback area north of Elk Grove Boulevard), the following, or equally effective protective measures to reduce the effects of surface disturbance and compaction shall be

implemented by PG&E, as determined in consultation with the USFWS.

1) Prior to the laydown of pipe to be stored in preparation for installation, PG&E or their agent shall lay down geotextile fabric over any suitable habitat in all areas where piping or other materials would be stored.

2) Prior to allowing any vehicles or heavy equipment into the pullback area, PG&E or their agent shall install wooden mats in all areas where vehicles will encroach upon vernal pool crustacean habitat. The wooden mats will help distribute the weight of vehicles and equipment and will prevent significant disturbance of soil in these areas.

3) Geotextile fabric and wooden mats shall only remain in the habitat areas as long as necessary for the installation work in the area. As soon as the work is completed all fabric, wooden mats and any other construction related materials shall be removed from the site.

(e) Water quality in the avoided wetlands shall be protected using rigorous erosion control techniques during construction in the watershed.

(f) Mowing for fire hazards and other maintenance activities shall be limited to those detailed in the 404 Permit and/or the Streambed Alteration permit (Agreement).

(g) Discharge of water from hydrostatic testing and/or dust control shall only occur in accordance with the CVRWQCB permits.

APM BIO-4. Ensure No Western Pond Turtles are Injured or Killed. A qualified biologist shall monitor bridge removal activities to ensure that no western pond turtles are injured or killed during Project construction. Any turtles found in or near the construction zone would be relocated to an appropriate area of suitable habitat a minimum of 100 feet downstream of the construction zone.

APM BIO-5. Survey for the Giant Garter Snake.

(a) All ground disturbing activities shall be restricted to the active season for GGS (May 1st through October 1st), or as determined through consultation initiated by PG&E with the USFWS.

(b) Pre-construction surveys shall be conducted by an experienced biologist within 24 hours prior to the start of work activities where land construction is planned in known or suitable habitat areas. If construction activities are delayed for more than 24 hours after the preconstruction surveys, then a new preconstruction survey shall be required. All surveys shall be conducted in accordance with the USFWS GGS survey protocols.

APM BIO-6. Pre-construction Bird Surveys.

(a) PG&E shall ensure that a pre-construction breeding-season survey is conducted by a qualified biologist (approximately February 1 through August 30) of the Project site. The survey shall be conducted by a qualified biologist to determine if any birds subject to the Migratory Bird Treaty Act (MBTA), including raptors, are nesting on or directly adjacent to the Project site.

If the above survey does not identify any nesting birds subject to the MBTA on the Project site, no further mitigation would be required. However, should any active bird nests be located on the Project site, the following mitigation measures shall be implemented.

(b) PG&E shall avoid all bird nest sites located in the Project site during the breeding season (approximately February 1 through August 30) while the nest is occupied with adults and/or young. This avoidance could consist of delaying construction to avoid the nesting season. Any occupied nest shall be monitored by a qualified biologist to determine when the nest is no longer in use. If construction cannot be delayed, avoidance shall include the establishment of a non-disturbance buffer zone around the nest site in order to reduce the effects of construction disturbances, including noise and dust. The size of the buffer zone will be

determined in consultation with the CDFG and USFWS, and shall consider existing conditions, the particular species, and the nature of the construction. The buffer zone shall be delineated by highly visible temporary construction fencing.

- (c) Every effort should be made to preserve Swainson's hawk nest trees through Project design or avoidance measures. However, if removal of the nest tree during the nesting season is unavoidable, a Section 2081 permit would be required from the CDFG. Mitigation for the loss of active Swainson's hawk nest trees at any time of year would be determined in consultation with the CDFG and could include the replacement of trees at a CDFG approved mitigation site and ratio.

APM BIO-7. Burrowing Owl Surveys.

- (a) Pre-construction surveys for burrowing owls shall be conducted by an experienced biologist within 30-days prior to the start of work activities where land construction is planned in known or suitable habitat areas. If construction activities are delayed for more than 30 days after the preconstruction surveys, then a new preconstruction survey shall be required. All surveys shall be conducted in accordance with the CDFG/California Burrowing Owl Consortium survey protocols.

- (b) If burrowing owls are discovered in the project area, PG&E's Technical and Ecological Services (TES), CDFG, and CSLC shall be notified. Where construction activities could directly affect burrowing owl survival or reproductive behavior, or where maintenance of a minimum 250-foot buffer zone around active burrowing owls nests (160 feet when owls are not nesting) is not practical, PG&E shall retain an experienced burrowing owl biologist to recommend project/site-specific mitigation measures to avoid violating CDFGs §3503 and §3503.5 and the MBTA, which could include the following or equally effective measures:

- A site-specific plan to complete nearby pipeline construction when adult owls are in burrows attending to young nestlings

(and thus not disturbed by the presence of construction equipment);

- Modification of construction procedures so critical pipeline construction tasks could be completed in as short a time as possible; and
- Close monitoring of the owls' behavior before, during and after construction so any significant changes in the owls' behavior would be apparent.

(c) If the proposed project would result in direct impacts to active burrows (i.e., trenching), passive relocation/exclusion shall be allowed during the non-breeding season (September to January). The CDFG shall be consulted on current passive relocation methodology before relocation of owls is attempted. Breeding burrowing owls and their young shall not be relocated. Following exclusion, the burrows can be destroyed to prevent the birds from returning to the site.

(d) Following the passive exclusion, burrows within 250 feet of the project area shall be seasonally blocked (anchored plywood or other similar mechanism) to prevent burrowing owls from establishing new burrows in the project area. Monitoring shall occur from prior to the nesting season through construction of the proposed project, as determined in consultation with the CDFG, to ensure that owls do not return to the project area during the construction season. The burrows will be unblocked prior to the beginning of the next breeding season.

APM BIO-8. Avoid Elderberry Shrubs. PG&E shall avoid elderberry shrubs by maintaining a minimum 100-foot buffer around any elderberry shrubs. Any ground disturbing activities within 100 feet of elderberry shrubs with stems measuring 1.0 inch or greater in diameter at ground level shall require consultation with the USFWS and follow the USFWS Conservation Guidelines for the Valley Elderberry Longhorn Beetle (USFWS 1999).

APM BIO-9. Prepare a Wetland Mitigation Plan. While current Project designs have avoided direct impacts to wetland features, PG&E shall prepare a wetland mitigation plan that ensures no net loss of wetlands. The wetland mitigation plan shall be based on the wetland delineation verified by the Corps. This measure may be implemented through the 404 permit and/or Streambed Alteration Agreement processes. The plan shall include the following or equally effective components:

Avoidance

- (a) Where feasible all wetland features shall be avoided with the use of HDD or hammer bore techniques.

Reduction/Avoidance

- (b) Prior to any construction activities on the site, a protective fence shall be installed a minimum of ten feet, if feasible, from the edge of all wetland habitat to be avoided in the immediate vicinity of the proposed construction areas. Prior to initiation of construction activities, a qualified biologist shall inspect the protective fencing to ensure that all wetland features have been appropriately protected. No encroachment into fenced areas shall be permitted during construction and the fence shall remain in place until all construction activities have been completed.
- (c) Water quality in the wetlands preserve shall be protected using rigorous erosion control techniques during construction in the watershed.
- (d) Mowing for fire hazards and other maintenance activities shall be limited to those detailed in the 404 Permit and/or the Streambed Alteration Agreement.
- (e) Discharge of water from hydrostatic testing and/or dust control shall only occur in accordance with the CVRWQCB permits.

APM BIO-10. Wildlife Protection During Construction.

(a) PG&E shall avoid impacting migratory fish by using HDD technology to install the pipeline under the Mokelumne and Cosumnes Rivers.

(b) PG&E shall provide all excavated, steep-walled holes and trenches in excess of three feet in depth with one or more escape ramps constructed of earthen fill or a wood/metal plank. If wildlife proof barricade fencing is available, it will also be used where appropriate. Escape ramps shall be less than a 45 degree angle. Trenches and pits shall be inspected for entrapped wildlife each working day before construction activities resume. Before such pits and trenches are filled, they shall be thoroughly inspected for entrapped animals. If any wildlife species are discovered, they should be allowed to escape voluntarily, without harassment, before construction activities resume, or removed from the trench or hole by a qualified biologist and allowed to escape unimpeded. All construction pipes, culverts, or similar structures that are stored at a construction site overnight shall be thoroughly inspected for trapped animals before the pipe is buried, capped, or otherwise used or moved. Pipes laid in trenches overnight shall be capped. If an animal is discovered inside a pipe, that section of pipe shall not be capped or buried until the animal has escaped. PG&E shall not use plastic mono-filament netting (erosion control matting) or similar material because amphibians and snakes may become entangled or trapped in it. Acceptable substitutes include coconut coir matting or tackified hydroseeding compounds.

APM BIO-11. Conduct Tree Surveys. Prior to any tree pruning or removal, PG&E shall retain a qualified arborist to conduct a tree survey to identify the species, location, and condition of any trees that would require removal. Any trees identified as native oaks, heritage trees, or landmark size trees shall be described and mapped as required by the Sacramento County Tree Preservation and Protection Ordinance.

Should it be determined that any native oaks, heritage trees, or landmark size trees would require removal, PG&E shall obtain a tree removal

1 permit from the County. Conditions of pruning or removal, and
2 replacement shall be subject to the provisions of the Sacramento County
3 Tree Preservation and Protection Ordinance.

4 **APM BIO-12. Monetary Compensation to the USFWS.** PG&E shall provide a
5 monetary compensation to the USFWS for disturbance on Stone Lakes
6 National Wildlife Refuge associated with the proposed Project as
7 determined in consultation with the landowner and USFWS. PG&E shall
8 provide written documentation to the CSLC from the USFWS confirming
9 that the agreed monetary compensation shall be used to enhance existing
10 habitat or acquire additional habitat of equal or greater resource value as
11 the habitat that would be permanently lost as a result of the proposed
12 Project.

13 **Impact Discussion**

14 A portion of the proposed Project in San Joaquin County falls under the San Joaquin
15 County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP). The
16 SJMSCP is intended to comprehensively minimize and mitigate impacts to plants, fish,
17 and wildlife habitat. Participants under the SJMSCP may conduct permitted activities that
18 result in or could result in “incidental take” of listed species and other species protected
19 under the plan. Participation in the SJMSCP is voluntary. PG&E is not planning to
20 participate in the SJMSCP for the proposed Project.

21 Both Sacramento and San Joaquin Counties have general plans that contain goals and
22 policies that are generally designed to protect natural resources such as riparian habitat,
23 open space, woodlands, wetlands, and species listed as threatened or endangered and
24 other sensitive species. Because the proposed Project is designed to avoid and minimize
25 any potential effects on natural resources, it would not conflict with Sacramento and San
26 Joaquin County general plans.

27 **Impact BIO-1: Potential Impacts to Vernal Pools and Vernal Pool Crustaceans.**

28 **Project activities could result in mortality to vernal pool crustaceans. (Potentially** 29 **Significant, Class II)**

30 Potential habitat for vernal pool fairy shrimp (*Branchinecta lynchi*) and the vernal pool
31 tadpole shrimp (*Lepidurus packardii*) occurs in vernal pools and seasonal wetlands on the
32 Stone Lakes National Wildlife Refuge, in relatively undisturbed grasslands and pastures

along the proposed pipeline alignment and along the UPRR ROW, including the pullback area north of Elk Grove Boulevard. The majority of this habitat would be avoided through the proposed use of HDD pipeline installation techniques. However, laydown of piping, driving, and transport of equipment would occur in the vicinity of vernal pools or depressional seasonal wetlands along the UPRR ROW. No excavation or other subsurface ground disturbance would occur in the pullback area north of Elk Grove Boulevard; however, activities in this area could result in surface disturbance and/or soil compaction, which may indirectly affect vernal pool habitat. PG&E has committed to implementing a series of wetland protection measures as identified in APM BIO-3 (see above). However, to ensure that all impacts to vernal pools and vernal pool crustaceans are reduced to less than significant levels, additional mitigation is proposed that requires the application of Best Management Practices to reduce pollutants in stormwater and other non-point source runoff.

Mitigation for Impact BIO-1:

MM BIO-1. Application of Best Management Practices (BMPs). BMPs shall be implemented by PG&E to reduce indirect impacts to vernal pools and other waters of the U.S. that could occur as a result of sedimentation and siltation from construction activities. The BMPs shall be selected to achieve maximum sediment removal and represent the best available technology that is economically achievable. The performance and effectiveness of these BMPs shall be determined either by visual means, where applicable (i.e., observation of above-normal sediment release), or by actual water sampling in cases where the verification of containment reduction or elimination is required to determine adequacy of the measure. BMPs to be implemented as part of this mitigation measure shall include, but are not limited to, the following measures:

- BMPs for temporary erosion control (such as silt fences, staked straw bales/wattles, silt/sediment basins and traps, check dams, geofabric, sandbag dikes, and temporary revegetation or other ground cover) shall be employed for disturbed areas, stockpiled soil, and along culverts and drainage ditches on the site and in downstream offsite areas that may be affected by construction activities. Requirements for the placement and monitoring of the BMPs shall become part of the contractor's project specifications.

Performance and adequacy of the measures shall be determined visually by site construction management and verified by the California State Lands Commission as appropriate.

- Dirt and debris shall be swept from paved areas in the construction zone on a daily basis as necessary to remove excessive accumulations of silt, mud, or other debris. Sweeping and dust removal shall be implemented by the contractor and oversight of these operations shall be the responsibility of the construction site superintendent.
- Grass or other vegetative cover shall be established on bare soils within the construction site as soon as possible after disturbance. If grass is chosen, a native seed mix shall be used. At minimum, vegetative application shall be completed by September 15th to allow for plant establishment. No disturbed surfaces or stockpile areas shall be left without erosion control measures in place during the period of October 1 through April 30. The application, schedule, and maintenance of the vegetative cover shall be the responsibility of the contractor and requirements to establish a vegetative cover shall be included in the construction contractor's project specifications.
- If discharges of sediment or hazardous substances to drainage ways are observed, construction shall be halted until the source of contamination is identified and remediated. Visual indications of such contamination include an oily sheen or coating on water, and noticeable turbidity or lack of clarity in the water.

Rationale for Mitigation

This mitigation measure would reduce the potential for indirect impacts to vernal pools and vernal pool crustaceans through the use of erosion and sediment control measures. Impacts would be reduced to less than significant (Class II).

Valley Elderberry Longhorn Beetle

A total of 40 elderberry shrubs (*Sambucus mexicana*) have been observed along the UPRR ROW near the northern end of the proposed pipeline alignment, adjacent to the

Stone Lakes National Wildlife Refuge, and along the southern end of the alignment, adjacent to the Cosumnes River Preserve. To minimize any direct or indirect impacts to the valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), PG&E has committed to implementing measures consistent with the USFWS guidelines (USFWS 1999), prior to any ground disturbing activities associated with the Project. Implementation of Applicant Proposed Measure APM BIO-8 (see above) would ensure that potential impacts are less than significant (Class III) through the establishment of a buffer zone, and avoidance measures.

Impact BIO-2: Potential Impacts to Migrating Fish Species

Degradation of water quality could result from hydrofracture (release of drilling fluids) into aquatic features and during bridge removal activities resulting in impacts to migratory fish species. (Potentially Significant, Class II)

The Cosumnes and Mokelumne Rivers represent suitable habitat for special status fish species; Delta smelt (*Hypomesus transpacificus*), Central Valley fall/late fall-run Chinook salmon (*Oncorhynchus tshawytscha*), and the Sacramento splittail (*Pogonichthys macrolepidotus*). Construction of the proposed pipeline would be completed under these rivers using HDD techniques, which would eliminate the need for personnel and equipment in the aquatic habitat. Some minor irrigation ditches would be trenched and anti-erosion/siltation measures would be employed to restrict discharge into the rivers. It would not be likely that direct impacts to the rivers would occur because the pipelines would be located at least 60 feet beneath the channels. However, the Project may indirectly impact species occurring in rivers, canals, drainages, or ponded water, including fish species. Indirect impacts to water quality could result from hydrofracture (release of drilling fluids) into aquatic features. This would be considered a potentially significant impact. However, in the event of an inadvertent release of HDD drilling fluids, PG&E would immediately put in place a contingency plan designed to limit the release (see Project Description Section 2.3.5, Construction Contingency Planning) by employing methods to re-establish drilling fluid circulation and contain the drilling fluid. In addition, implementation of Mitigation Measure BIO-2 shall be required.

Mitigation for Impact BIO-2:

MM BIO-2. Implement the North Delta Construction Window. PG&E shall complete the Mokelumne and Cosumnes River horizontal directional drill

and bridge removal activities by November 30th in accordance with the National Marine Fisheries Service's suggested North Delta Construction Window of June 1 through November 30 to avoid impacts to migrating fish. This construction window shall be subject to verification by the National Oceanic and Atmospheric Administration Fisheries.

Rationale for Mitigation

This mitigation measure would reduce the potential for impacts to the movement of migratory fish by restricting construction activities in the vicinity of the North Delta Construction Window of June 1 through November 30. Impacts would be reduced to less than significant (Class II).

Impact BIO-3: Potential Impacts to California Tiger Salamanders.

Project activities could result in mortality to California Tiger Salamanders. (Potentially Significant, Class II)

California tiger salamander (*Ambystoma californiense*) may use ground squirrel burrows and other upland areas in the Project area for shelter, while vernal pools provide potential breeding habitat for this species. The California tiger salamander may be impacted by the proposed Project through the direct disturbance of pools and/or burrows. This species could also be affected by site runoff into these habitats, should the Project be constructed during the wet season. Applicant Proposed Measure APM BIO-3, Mitigation Measure BIO-1, and implementation of proposed HHD release contingency plans would reduce this impact; however, impacts on the California tiger salamander would still be potentially significant.

Mitigation for Impact BIO-3:

MM BIO-3. Pre-Construction Surveys for California Tiger Salamander. No more than two weeks before ground-disturbing activities begin, a qualified biologist shall survey appropriate habitat within the Project area that may be directly affected by Project activities for the presence of California tiger salamander using the most up-to-date protocol provided by the United States Fish and Wildlife Service (USFWS) (USFWS 2003). Daily visual clearance surveys shall also be conducted during initial ground-disturbing activities. If any California tiger salamander is identified where habitat disturbance is proposed, work shall be halted and a USFWS-approved

biologist shall be contacted to determine appropriate actions, unless already stipulated by USFWS. If the USFWS approve moving salamanders, the qualified biologist shall be allowed sufficient time to move the species from the work site before work activities resume. Only USFWS -approved biologists shall participate in the capturing, handling, and translocation of California tiger salamander. Any California tiger salamander relocated due to the Project shall be moved to nearby appropriate habitat, as determined by the qualified biologist. Results of pre-construction surveys shall be reported to the USFWS and the California State Lands Commission.

Rationale for Mitigation

Pre-construction surveys and monitoring would reduce the potential for impacts to California tiger salamander. The mitigation measure provides appropriate protocol to relocate salamanders found near the construction site. Impacts would be reduced to less than significant (Class II).

Impact BIO-4: Potential Impacts to Western Pond Turtles.

Project activities could result in mortality to western ponds turtles. (Potentially Significant, Class II)

Western pond turtles (*Clemmys marmorata*) could use open water and freshwater marsh habitat throughout the Cosumnes River Preserve and the more naturalized channel that crosses the proposed Project alignment. With regard to pipeline construction, potential habitat would be avoided through the use of HDD technology, which would be used to install the pipe a minimum of 60 feet below the beds of the navigable waterways. However, demolition activities associated with the removal of the suspension bridge could injure western pond turtles resulting in a potentially significant impact. Applicant Proposed Measures APM BIO-4 and APM BIO-10 would provide appropriate protocol to relocate turtles found near the construction site and reduce the likelihood of a western pond turtle becoming trapped within the construction site. Additionally, the HDD contingency plan (see Project Description Section 2.3.5, Construction Contingency Planning) would minimize the potential for indirect effects due to hydrofracture. However, to ensure that impacts would be reduced to less than significant levels, pre-construction surveys would be required.

Mitigation for Impact BIO-4:

MM BIO-4. Pre-Construction Surveys for Western Pond Turtle. PG&E shall ensure that pre-construction surveys for the western pond turtle are conducted by an experienced biologist within 24 hours prior to the start of work activities where land construction is planned in known or suitable habitat areas. If construction activities are delayed for more than 24 hours after the pre-construction surveys, then a new pre-construction survey shall be required.

Rationale for Mitigation

Pre-construction surveys and monitoring during bridge construction activities would reduce the potential for impacts to western pond turtle. Impacts would be reduced to less than significant (Class II).

Impact BIO-5: Potential Impacts to Giant Garter Snakes

Project activities could result in mortality to giant garter snakes. (Potentially Significant, Class II)

One known occurrence of giant garter snake (*Thamnophis gigas*) has been recorded immediately adjacent to the north section of the proposed alignment just southeast of Bilby Road (CDFG 2007). Some of the other large, naturalized drainages that cross the proposed alignment could also provide habitat for the giant garter snake. In the Cosumnes River Preserve boundaries, at the south end of the proposed alignment, there are no records of giant garter snake occurrences. However, the preserve lies between known populations to the west and east. According to Eric Hansen, a leading authority on giant garter snakes, no substantive studies for giant garter snakes have ever been conducted within the preserve, but it is likely that they occur there (PG&E 2006d).

The proposed Project would largely avoid giant garter snake habitat through the use of HDD techniques (as previously described). However, some ground disturbance would occur within the boundaries of the Cosumnes River Preserve in an area considered to be giant garter snake upland habitat. "Take" of this species would constitute a significant impact. Implementation of Applicant Proposed Measure APM BIO-5 requires construction to be restricted to the active season for giant garter snakes and requires pre-construction surveys and APM BIO-10 would reduce the likelihood of a giant garter snake becoming trapped within the construction site. Additionally, the HDD contingency plan (see Project Description Section 2.3.5, Construction Contingency Planning) would minimize the

potential for indirect effects due to hydrofracture. However, Mitigation Measure BIO-5 provides additional detail regarding pre-construction surveys in order to ensure that impacts are reduced to less than significant.

Mitigation for Impact BIO-5:

MM BIO-5. Pre-Construction Surveys for Giant Garter Snakes. PG&E shall ensure that pre-construction surveys are conducted by an experienced biologist within 24 hours prior to the start of work activities where land construction is planned in known or suitable habitat areas. If construction activities are delayed for more than 24 hours after the pre-construction surveys, then a new pre-construction survey shall be required.

If any giant garter snake is identified where habitat disturbance is proposed, work shall be halted and a U.S. Fish and Wildlife Service (USFWS)-approved biologist shall be contacted to determine appropriate actions, unless already stipulated by the USFWS. If the USFWS approve moving the snake, the qualified biologist shall be allowed sufficient time to move the species from the work site before work activities resume. Only USFWS -approved biologists shall participate in the capturing, handling, and translocation of giant garter snake. Any giant garter snake relocated because of the Project shall be moved to nearby appropriate habitat, as determined by the qualified biologist. Results of pre-construction surveys shall be reported to the USFWS.

Rationale for Mitigation

This mitigation measure would identify areas where giant garter snake are present, and avoid, where possible, impacts on this species. Impacts would be reduced to less than significant (Class II).

Impact BIO-6: Potential Impacts to Tri-colored Blackbirds.

Project activities could result in direct or indirect impacts to tri-colored blackbird nesting colonies (Potentially Significant, Class II)

Tri-colored blackbirds (*Agelaius tricolor*) are known to occur along the UPRR ROW within the northern end of the Project area, near the intersection of Bruceville and Bilby Roads (CDFG 2007). Construction disturbances, such as noise and dust, could hinder

successful breeding of this species. To ensure there are no direct or indirect significant impacts to this species, PG&E would implement the following mitigation measure prior to any ground disturbing activities associated with the Project. Implementation of the following mitigation measure would reduce any potential impact to less than significant (Class II).

Mitigation for Impact BIO-6

MM BIO-6. Pre-construction Surveys for Tri-colored Blackbirds. Pre-construction surveys for tri-colored blackbirds shall be performed. PG&E shall have a qualified biologist conduct at least two pre-construction surveys (separated by at least 2 weeks) for tri-colored blackbird colonies in suitable habitat prior to construction that will occur between March 15 and August 1 of any year. If a colony is identified within the study area, PG&E shall consult with the California Department of Fish and Game (CDFG) regarding suitable measures to avoid impacts to the breeding effort. Measures shall include, but are not limited to:

- Maintaining a 500-foot buffer around each colony; no construction activities shall be permitted within this buffer except as a result of consultation with the CDFG.
- Depending on conditions specific to each colony, and the relative location and rate of construction activities, it may be feasible for construction to occur as planned within the buffer without impacting the breeding effort. In this case (to be determined in consultation with the CDFG), the colony shall be monitored by a qualified biologist during construction within the buffer. If, in the professional opinion of the monitor, the Project would impact the colony, the biologist shall immediately inform the construction manager and the CDFG. The construction manager shall stop construction activities within the buffer until the colony is no longer active or the Project receives approval to continue from the CDFG.

Rationale for Mitigation

This mitigation measure would reduce the potential for direct and indirect impacts to tri-colored blackbirds by identifying locations where the species is present, avoiding

species habitat, and establishing buffers around located colonies within the study area. These measures would minimize disturbance to the birds during construction activities. Impacts would be reduced to less than significant (Class II).

Burrowing Owls

There have been no observations of burrowing owls (*Athene cunicularia*) or burrows along the proposed pipeline route; however, potential habitat is present. To ensure that there would be no direct or indirect impacts to burrowing owl, PG&E has committed to identifying locations where the species may be present, avoiding the species habitat, and creating buffers around occupied owl burrows near the construction area (see Applicant Proposed Measure APM BIO-7, above). These measures would minimize disturbance to the animals during construction activities. Implementation of these measures would ensure that impacts to burrowing owls would be less than significant (Class III) because any owls discovered within the Project right-of-way would be avoided.

Swainson's Hawk and Other Raptors

The proposed Project would result in the temporary loss of annual grassland and agricultural production during Project construction, which could temporarily impact agricultural land foraging habitat for Swainson's hawk (*Buteo swainsoni*) and other raptors. The temporary impact would be considered insignificant due to the relatively small impact area and the expansive area of surrounding land that contains equally suitable Swainson's hawk foraging habitat.

In addition to Swainson's hawk, other raptors or special status birds could use trees in the Project area, some of which may need to be removed during the bridge removal and pipeline construction activities. Swainson's hawk is listed as threatened under the CESA and removal of trees or other Project-related disturbances such as noise that results in the loss or abandonment of a nest is prohibited. Most nesting birds are also protected by the MBTA. Project-related disturbance resulting in the loss or abandonment of a nest would be considered a potentially significant impact. However, PG&E has committed to identifying areas where Swainson's hawks and other raptors are present, and to avoiding impacts on this species, where possible (see Applicant Proposed Measure APM BIO-6, above). PG&E would also obtain appropriate permits and apply necessary mitigation if direct impacts are unavoidable. Impacts to Swainson's hawk and other raptors would be less than significant (Class III).

Impact BIO-7: Potential Impacts to Great Egret, Great Blue Heron, and Double-Crested Cormorant Rookeries.

Project activities could result in disturbance to the great egret, great blue heron, and double-crested cormorant rookeries. (Potentially Significant, Class II)

These three bird species (*Ardea alba*, *Ardea herodias*, and *Phalacrocorax auritus*) could use trees in the study area for nesting habitat, some of which may need to be removed during the bridge removal and pipeline construction activities. Project-related disturbances, including noise, that result in the loss or abandonment of a nest would be considered a potentially significant impact. However, implementation of the following mitigation measure would reduce potentially significant impacts to less than significant (Class II).

Mitigation for Impact BIO-7:

MM BIO-7a. Pre-Construction Breeding-Season Surveys. PG&E shall conduct a pre-construction survey of the study area. The survey shall be conducted by a qualified biologist to determine if any birds are nesting on or directly adjacent to the Project area. If the survey does not identify any nesting egrets, heron, or cormorants, no further mitigation would be required.

MM BIO-7b. Avoidance Measures. PG&E shall avoid all bird nest sites located in the Project area during the breeding season, approximately April through August, while the nest is occupied with adults and/or young. This could consist of delaying construction to avoid the nesting season. Any occupied nest shall be monitored by a qualified biologist to determine when the nest is no longer in use. If construction cannot be delayed, avoidance shall include the establishment of a non-disturbance buffer zone around the nest site. The size of the buffer zone will be determined in consultation with the California Department of Fish and Game. The buffer zone shall be delineated by highly visible temporary construction fencing.

Rationale for Mitigation

These mitigation measures would identify areas where egret, heron or cormorant rookeries are present, and avoid, where possible, impacts on this species. Impacts would be reduced to less than significant (Class II).

Special Status Plants

Special plant species, such as Dwarf downingia (*Downingia pusilla*) and *legenere* (*Legenere limosa*), have been documented growing in vernal pools in the Stone Lakes National Wildlife Refuge during surveys conducted in 2005. Habitat for these and other special status plant species occurs in the vernal pools, seasonal wetlands, and freshwater emergent marsh habitat found in the Stone Lakes National Wildlife Refuge, the Cosumnes River Preserve, and along drainages crossing the proposed pipeline alignment between the preserve areas. The majority of this habitat would be avoided using HDD installation, but impacts to special status plants and their habitats could occur during an inadvertent release of drilling fluid. PG&E has designed the proposed HDDs such that the HDD would enter and exit the surface away from the edge of habitat areas and the pipeline would be installed a minimum of 60 feet below the bed and banks of the Cosumnes and Mokelumne Rivers. Applicant Proposed Measures APM BIO-1 and APM BIO-2 (see above) would reduce the potential for impacts to special status plant species by educating the construction crew on sensitive biological resources and fencing off the areas containing special status plants or their habitats to assure avoidance during construction activities. In addition, the HDD contingency plan (see Project Description Section 2.3.5, Construction Contingency Planning) would minimize the potential for indirect effects due to hydrofracture. Implementation of these measures would ensure that potential impacts on special-status plants are less than significant (Class III).

Jurisdictional Waterways

Project construction would cross under two major waterways, the Cosumnes River and the Mokelumne River, which are considered Waters of the U.S., and under the regulatory authority of the USACE. Impacts on the waterways associated with proposed pipeline construction would be avoided using HDD technology. Bridge removal and HDD activities would require permits from the USACE and CDFG, which could add additional conditions to prevent impacts on the rivers.

There are ten drainages/irrigation ditches crossing the Project area that could be considered Waters of the U.S. by the USACE, all of which would be crossed during HDD or hammer bore activities. There are also seasonal wetlands and vernal pools along the UPRR ROW and on the Stone Lakes National Wildlife Refuge, all of which could be under the USACE jurisdiction. To cover these temporary impacts to ditches and other wetlands, PG&E has applied to the USACE for a Section 404 individual permit (PG&E 2007).

The Project has been designed to avoid impacting much of the wetland habitat in the area. However, there are wetlands north of the Elk Grove Station, along the UPRR, where pipe would be temporarily strung to be pulled back through the HDD hole. Because construction would occur during the summer months, and the pullback area would not involve subsurface disturbance, impacts to these wetlands are not expected to occur. Regardless, PG&E has committed to ensuring that no net loss of wetlands or Waters of the U.S. occurs by establishing a mitigation plan, including erosion and sediment control measures, that would minimize effects from construction activities (see Applicant Proposed Measure APM BIO-9, above). Impacts would be less than significant (Class III).

Impact BIO-8: Potential Impacts to Trees Within the Study Area.

Construction activities could require the removal of trees, including native oak or landmark trees as defined by the Sacramento County tree ordinance, within the study area (Potentially Significant, Class II)

A number of trees along the proposed pipeline alignment would require removal to accommodate the pipeline installation, and to facilitate the proposed removal of the bridge across the Cosumnes River. Trees to be removed could include both native species of oaks, and ornamental street trees. All of the trees that would be removed occur in Sacramento County, and a permit pursuant to the Sacramento County Tree Preservation and Protection Ordinance would be required for their removal. For trees that must be removed, the appropriate permit application process would be followed as required by the Sacramento County ordinance (see Applicant Proposed Measure APM BIO-11, above). Implementation of Mitigation Measure BIO-8, below, would provide additional protection for sensitive tree resources adjacent to construction activities.

Mitigation for Impact BIO-8

MM BIO-8. Additional Protection for Sensitive Trees. Sensitive tree resources adjacent to construction activities may require additional protection. Where feasible, PG&E shall establish a minimum 10-foot-wide buffer zone outside the dripline for oaks or landmark trees. The locations of these resources shall be clearly identified by PG&E on the construction drawings and marked in the field. PG&E shall ensure that: fencing or other barriers shall remain in place until all construction and restoration work that involves heavy equipment is complete; construction vehicles, equipment, or materials shall not be parked or stored within the fenced

1 area; no signs, ropes, cables, or other items shall be attached to the
2 protected trees; grading, filling, trenching, paving, irrigation, and
3 landscaping within the driplines of oak trees shall be limited; and only
4 hand-digging be done in the vicinity of major trees to prevent root cutting
5 and mangling by heavy equipment. Grading within the driplines of oak
6 trees shall not be permitted unless specifically authorized by Sacramento
7 County.

8 Rationale for Mitigation

9 This mitigation measure would provide protection for sensitive tree resources in the
10 Project area through the establishment of a buffer zone around the trees. Impacts
11 would be reduced to less than significant levels (Class II).

12 **Habitat within the Stone Lakes Refuge Conservancy Easement**

13 A portion of the proposed Project would be located on parcels adjacent to the UPRR
14 and Elk Grove Boulevard within the Stone Lakes National Wildlife Refuge, which is
15 covered under a conservation easement granted by Laguna Stonelake LLC to USFWS.
16 Pre-construction consultation has been initiated between PG&E and the USFWS.
17 PG&E's utility easement predates the Stone Lakes National Wildlife Refuge
18 Conservation Easement, and the terms and conditions of the PG&E easement would
19 apply to the Project. The expansion of the Elk Grove Station would require the
20 conversion of approximately 1,560 square feet from the Stone Lakes National Wildlife
21 Refuge Conservation Easement to PG&E's utility easement. This conversion would be
22 a potentially significant impact; however, PG&E would provide monetary compensation
23 to mitigate for potential impacts to habitat within the Stone Lakes Refuge Conservation
24 Easement (see Applicant Proposed Measure APM BIO-12, above). Impacts would be
25 less than significant (Class III).

26 Table 4.1-2 presents a summary of impacts on biological resources and recommended
27 mitigation measures.

Table 4.1-2. Summary of Biological Impacts and Mitigation Measures

| Impacts | Mitigation Measures |
|--|--|
| BIO-1: Potential Impacts to Vernal Pools and Vernal Pool Crustaceans | MM BIO-1. Application of Best Management Practices (BMPs) |
| BIO-2: Potential Impacts to Migrating Fish Species | MM BIO-2. Implement the North Delta Construction Window. |
| BIO-3: Potential Impacts to California Tiger Salamanders | MM BIO-3. Pre-construction Surveys for California Tiger Salamanders |
| BIO-4: Potential Impacts to Western Pond Turtles | MM BIO-4. Pre-Construction Surveys for Western Pond Turtle. |
| BIO-5: Potential Impacts to Giant Garter Snakes | MM BIO-5. Pre-Construction Surveys for Giant Garter Snakes |
| BIO-6: Potential Impacts to Tri-colored Blackbirds | MM BIO-6. Pre-construction Surveys for Tri-colored Blackbirds |
| BIO-7: Potential Impacts to Great Egret, Great Blue Heron, and Double-crested Cormorant Rookeries | MM BIO-7a. Pre-Construction Breeding-Season Surveys |
| | MM BIO-7b. Avoidance Measures |
| BIO-8: Potential Impacts to Trees within the Study Area | MM BIO-8. Additional Protection for Sensitive Trees |

4.1.5 Impacts of Alternatives

No Project Alternative

The No Project Alternative would not result in the construction and operation of a new natural gas pipeline between the Elk Grove and Thornton Stations by the January 2009, winter season and could result in emergency curtailment, or interruption of services to approximately 160,000 residential and small commercial gas accounts under Abnormal Peak Day (APD) design condition. The active segment of the existing Line 108 pipeline would continue to provide distribution services to local landowners. No impacts on biological resources would occur under the No Project Alternative.

Franklin 1 Alternative

The Franklin 1 Alternative would have greater impacts to biological resources than the proposed Project. Habitat types occurring along this alternative route include agricultural land, seasonal wetlands, and vernal pools. This alternative would impact two vernal pools in the HDD pullback area on the Stone Lakes National Wildlife Refuge.

Surface disturbances totaling 2.51 acres would result from construction activity that could adversely impact special-status vernal pool species including vernal pool fairy shrimp (*Branchinecta lynchi*), vernal pool tadpole shrimp (*Lepidurus packardii*), dwarf downingia (*Downingia pusilla*), Boggs Lake hedge-hyssop (*Gratiola heterosepala*), legenere (*Legenere limosa*), and slender orcutt grass (*Orcuttia tenuis*). Potentially significant impacts on other biological resources would also occur under this alternative as with the proposed Project. Implementation of Mitigation Measures BIO-1 through BIO-7 would be required to reduce impacts to less than significant levels (Class II).

Franklin 2 Alternative

The Franklin 2 Alternative is a shorter route than the Franklin 1 Alternative; however, this alternative would result in the same level of impacts to biological resources as the Franklin 1 Alternative. Habitat types occurring in this section of the pipeline include agriculture, seasonal wetlands, and vernal pools. This alternative would impact the same two vernal pools in the HDD pullback area on the Stone Lakes National Wildlife Refuge as under the Franklin 1 Alternative. Surface disturbances totaling 2.51 acres would result from project activity that could adversely impact the same special-status vernal pool species as identified under the Franklin 1 Alternative, above. Potentially significant impacts on other biological resources would also occur under this alternative as with the proposed Project. Implementation of Mitigation Measures BIO-1 through BIO-7 would be required to reduce impacts to less than significant (Class II).

Project without Bridge Replacement Alternative

The Project without Bridge Replacement alternative would not alter any portion of the proposed Project pipeline alignment or the construction methods. Under this alternative the historic suspension bridge would be left in place, so the biological impacts that would occur during its demolition and removal would be avoided. All other biological impacts under this alternative would be the same as for the proposed Project (Class II).

4.1.6 Cumulative Projects Impact Analysis

In addition to the proposed Project, other projects in the area may contribute to cumulative impacts on biological resources in the vicinity of the Project. Those projects potentially contributing to cumulative impacts are presented and discussed in Section 3.0. Habitats affected by the proposed Project and other cumulative projects include: agricultural lands, annual grassland, ruderal communities, and wetlands communities including vernal pools, seasonal wetlands, freshwater emergent marsh, irrigation

1 ditches, riparian woodland, and riverine habitat. These habitats provide suitable habitat
2 for special status plants and wildlife. Proposed projects located at the north end of the
3 proposed alignment, such as the Franklin Crossing and Franklin Boulevard Roadway
4 projects (see Figure 3.4-1, Cumulative Projects Study Area) may result in additional
5 affects to vernal pools and seasonal wetlands in this area. Potentially affected species
6 include vernal pool plants and crustaceans, and giant garter snake (*Thamnophis gigas*).
7 Bird species such as Swainson's hawk (*Buteo swainsoni*) and tri-colored blackbird
8 (*Agelaius tricolor*) also occur in the immediate vicinity and may be affected by
9 cumulative project impacts to surrounding habitats.

10 The three pipeline projects (Locations 4, 5 and 6) summarized in Table 3.4-1 would also
11 contribute to the cumulative impacts to local sensitive plants and wildlife. These
12 projects are linear and would likely have similar impacts as the proposed Project, where
13 the majority of the projects facilities would be underground and would not have long-
14 term permanent impacts on biological resources.

15 All of the projects in the vicinity of the proposed Project would involve mitigation
16 measures similar to those discussed in Section 4.1.4; these measures would be
17 designed to minimize the potential for impacts on biological resources. Any potential
18 cumulative impacts would, therefore, be minimized by the implementation of mitigation
19 measures, including those recommended by the USFWS and CDFG. Compensatory
20 offsite mitigation and other measures described in Section 4.1.4 would reduce any
21 potential cumulative impacts from the proposed Project to less than significant
22 (Class II).